

# HITACHI

**SM003****32PD3000E  
42PD3000E**

## **SERVICE MANUAL MANUEL D'ENTRETIEN WARTUNGSHANDBUCH**

### **CAUTION:**

Before servicing this chassis, it is important that the service technician read the "Safety Precautions" and "Product Safety Notices" in this service manual.

### **ATTENTION:**

Avant d'effectuer l'entretien du châassis, le technicien doit lire les «Précautions de sécurité» et les «Notices de sécurité du produit» présentés dans le présent manuel.

### **VORSICHT:**

Vor Öffnen des Gehäuses hat der Service-Ingenieur die „Sicherheitshinweise" und „Hinweise zur Produktsicherheit" in diesem Wartungshandbuch zu lesen.

Data contained within this Service manual is subject to alteration for improvement.

Les données fournies dans le présent manuel d'entretien peuvent faire l'objet de modifications en vue de perfectionner le produit.

Die in diesem Wartungshandbuch enthaltenen Spezifikationen können sich zwecks Verbesserungen ändern.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

Plasma TV  
October 2002

# Safety

## ENGLISH

### SAFETY PRECAUTIONS

**WARNING:** The following precautions must be observed.

#### ALL PRODUCTS

Before any service is performed on the chassis an isolation transformer should be inserted between the power line and the product.

1. When replacing the chassis in the cabinet, ensure all the protective devices are put back in place.
2. When service is required, observe the original lead dressing. Extra precaution should be taken to ensure correct lead dressing in any high voltage circuitry area.
3. Many electrical and mechanical parts in HITACHI products have special safety related characteristics. These characteristics are often not evident from visual inspection, nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified by marking with a ! on the schematics and the replacement parts list. The use of a substitute replacement component that does not have the same safety characteristics as the HITACHI recommended replacement one, shown in the parts list, may create electrical shock, fire, X-radiation, or other hazards.
4. Always replace original spacers and maintain lead lengths. Furthermore, where a short circuit has occurred, replace those components that indicate evidence of overheating.
5. Insulation resistance should not be less than 2M ohms at 500V DC between the main poles and any accessible metal parts.
6. No flashover or breakdown should occur during the dielectric strength test, applying 3kV AC or 4.25kV DC for two seconds between the main poles and accessible metal parts.
7. Before returning a serviced product to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock. The service technician must make sure that no protective device built into the instrument by the manufacturer has become defective, or inadvertently damaged during servicing.

### CE MARK

1. HITACHI products may contain the CE mark on the rating plate indicating that the product contains parts that have been specifically approved to provide electromagnetic compatibility to designated levels.

2. When replacing any part in this product, please use only the correct part itemised in the parts list to ensure this standard is maintained, and take care to replace lead dressing to its original state, as this can have a bearing on the electromagnetic radiation/immunity.

### PICTURE TUBE

1. The line output stage can develop voltages in excess of 25kV; if the E.H.T. cap is required to be removed, discharge the anode to chassis via a high value resistor, prior to its removal from the picture tube.

2. High voltage should always be kept at the rated value of the chassis and no higher. Operating at higher voltages may cause a failure of the picture tube or high voltage supply, and also, under certain circumstances could produce X-radiation levels moderately in excess of design levels. The high voltage must not, under any circumstances, exceed 29kV on the chassis (except for projection Televisions).

3. The primary source of X-radiation in the product is the picture tube. The picture tube utilised for the above mentioned function in this chassis is specially constructed to limit X-radiation. For continued X-radiation protection, replace tube with the same type as the original HITACHI approved type

4. Keep the picture tube away from the body while handling. Do not install, remove, or handle the picture tube in any manner unless shatterproof goggles are worn. People not so equipped should be kept away while picture tubes are handled

### LASERS

If the product contains a laser avoid direct exposure to the beam when the cover is open or when interlocks are defeated or have failed.

# FRANÇAIS

## CONSIGNES DE SECURITE

**AVERTISSEMENT:** vous devez respecter les précautions suivantes

**POUR TOUS LES PRODUITS** Avant d'effectuer une intervention d'entretien sur le châssis, vous devez insérer un transformateur d'isolement entre la ligne d'alimentation électrique et le produit.

1. Lors de la remontage du châssis dans le coffret, vérifiez que tous les dispositifs de protection sont remis en place.
2. Lorsqu'une intervention d'entretien s'avère nécessaire, respectez l'agencement d'origine des conducteurs. Vous devez prendre des précautions supplémentaires pour garantir un agencement correct des conducteurs dans toutes les zones où des circuits haute tension sont présents.
3. De nombreux composants électriques et mécaniques des appareils HITACHI ont des caractéristiques spéciales de sécurité. Bien souvent, ces caractéristiques ne sont pas évidentes lors d'un examen visuel et la protection qu'ils offrent n'est pas forcément garantie si vous utilisez des composants de rechange conçus, par exemple, pour une tension plus élevée, une puissance plus forte. Les pièces de rechange qui offrent des caractéristiques spéciales de sécurité sont identifiées par un repérage comportant le symbole ! sur les schémas et sur la nomenclature des pièces de rechange. L'emploi d'un composant de rechange qui ne respecte pas les mêmes caractéristiques de sécurité que la pièce de rechange que recommande HITACHI et qui figure dans la nomenclature risque de provoquer un choc électrique, un incendie, des rayons X ou d'autres dangers.
4. Remettez toujours en place les entretoises d'origine et respectez la longueur des conduites. En outre, à la suite d'un court-circuit, remplacez les composants présentant des signes de surchauffe.
5. La résistance d'isolement doit être supérieure ou égale à 2 méga ohms à 500 V c.c. entre les poles principaux et des composants métalliques accessibles, quels qu'ils soient.
6. Aucun claquage et aucune rupture ne doit se produire pendant l'essai de résistance diélectrique à la suite de l'application d'une tension de 3 kV c.a. ou de 4,35 kV c.c. pendant deux secondes entre les poles principaux et des composants métalliques accessibles.
7. Avant de remettre au client un produit qui a fait l'objet d'un entretien, le technicien qui s'est chargé de cette intervention doit tester à fond cet ensemble pour s'assurer qu'il ne présente aucun danger opérationnel et aucun risque de choc électrique. Ce technicien doit s'assurer qu'aucun des dispositifs de protection intégrés à cet instrument par le fabricant n'est défectueux ou n'a été endommagé de façon accidentelle lors de l'entretien. suivantes

## LABEL CE

1. Les produits HITACHI peuvent avoir reçu le label CE qui figure sur la plaque signalétique pour indiquer que cet ensemble contient des composants qui ont fait l'objet d'une homologation spécifique de respect des normes de compatibilité électromagnétique en fonction de niveaux bien spécifiés.

2. Lors du remplacement d'un des composants de ce produit, utilisez uniquement le composant correct identifié dans la nomenclature afin de maintenir le respect de cette norme ; en outre, vous devez également ramener l'agencement des conducteurs à son état d'origine car cela peut avoir une influence au niveau des rayonnements électromagnétiques et sur la protection contre ces rayons.

## PICTURE TUBE

1. L'étage de sortie des lignes peut développer des tensions de plus de 25 kV ; s'il faut retirer le chapeau de protection contre les tensions extrêmement élevées, il convient de décharger l'anode contre le châssis par le biais d'une résistance de forte valeur avant de déposer ce chapeau du tube image.

2. La haute tension doit toujours se maintenir à la valeur nominale du châssis et ne pas dépasser cette dernière. Un fonctionnement à des températures élevées peut provoquer une défaillance du tube image ou l'entrée d'une tension élevée. Dans certains cas, cela peut même provoquer des rayons X d'un niveau légèrement supérieur aux valeurs de calcul. Cette haute tension ne doit en aucun cas dépasser 29 kV sur le châssis (à l'exception des téléviseurs de projection).

3. La principale source de rayons X de cet appareil est le tube image. Le tube image employé pour assurer la fonction susmentionnée dans ce châssis est spécialement construit pour limiter des rayons X. Pour maintenir cette protection contre les rayons X, il faut remplacer le tube d'origine d'un type agréé par HITACHI par un autre tube de même type.

4. Lors des manipulations, ne tenez jamais le tube image contre le corps. Pendant toutes les opérations d'installation, de dépose et de manipulation de ce tube image, quelle que soit la méthode employée, vous devez toujours porter des lunettes de sécurité anti-éclatements. Les personnes qui ne portent pas ce type de lunettes doivent se tenir à l'écart du tube image lors de la manipulation de ce dernier.

## RAYONS LASER

Si ce produit contient un rayon laser, évitez toute exposition directe à ce faisceau lors de l'ouverture du couvercle ou lors de l'élimination des verrouillages de sécurité ou après défaillance de ces verrouillages.

# DEUTSCH

## SICHERHEITSVORKEHRUNGEN

**WARNUNG:** Die folgenden Vorkehrungen müssen eingehalten werden.

**ALLE PRODUKTE** Bevor die Grundplatte gewartet wird, sollte ein Trenntrafo zwischen die Netzleitung und das Produkt eingebracht werden.

1. Wenn die Grundplatte in das Gehäuse zurückgestellt wird, stellen Sie sicher, dass alle Schutzvorrichtungen wieder an ihrem Ort sind.
2. Wenn Wartung erforderlich ist, halten Sie die originale Verdrahtungsart ein. Besondere Vorsicht ist nötig, um die korrekte Verdrahtungsart in jedem Hochspannungsstromkreis zu gewährleisten.
3. Viele elektrische und mechanische Teile von HITACHI Produkten haben besondere sicherheitsbezogene Eigenschaften. Diese Eigenschaften fallen oft nicht ins Auge, aber der durch sie gewährte Schutz kann nicht unbedingt erreicht werden, wenn man Ersatzteile benutzt, die für höhere Spannung, Leistung usw. ausgelegt sind. Ersatzteile, die diese besonderen Sicherheitsmerkmale haben, sind in den Prinzipskizzen und Ersatzteillisten an einem ! zu erkennen. Der Gebrauch von Ersatzteilen, die nicht dieselben Sicherheitsmerkmale haben wie die empfohlenen HITACHI Ersatzteile, wie sie in der Ersatzteilliste aufgeführt sind, kann zu elektrischem Schlag, Feuer, Röntgenstrahlung und anderen Gefahren führen.
4. Immer die originalen Abstandsstücke ersetzen und die Leitungslängen beibehalten. Wo ein Kurzschluss passiert ist, die Teile ersetzen, bei denen Überhitzung nachzuweisen ist.
5. Der Isolierwert sollte bei 500 V Gleichstrom zwischen den Hauptpolen und allen zugänglichen Metallteilen nicht unter 2M Ohm liegen.
6. Bei der Prüfung auf Durchschlagsfestigkeit sollte kein Überschlag oder Durchschlag vorkommen, wenn zwei Sekunden lang 3 kV Wechselstrom oder 4,25 kV Gleichstrom zwischen den Hauptpolen und allen zugänglichen Metallteilen angelegt wird.
7. Bevor das gewartete Produkt dem Kunden zurückgegeben wird, muss der Wartungstechniker das Gerät gründlich prüfen, um sicherzustellen, dass es betriebssicher ist ohne das Risiko eines elektrischen Schlages. Der Wartungstechniker muss sicherstellen, dass keine vom Hersteller im Gerät eingebaute Schutzvorkehrung schadhaft geworden ist oder bei der Wartung unabsichtlich beschädigt wurde.

## CE KENNZEICHEN

1. HITACHI Produkte enthalten eventuell das CE Kennzeichen auf dem Leistungsschild, welches angibt, dass das Produkt Teile enthält, die eigens zugelassen sind, um bis zu einem spezifizierten Niveau elektromagnetische Störfreiheit zu bewirken.
2. Wenn Sie irgendein Teil in diesem Produkt ersetzen, benutzen Sie bitte nur das korrekte Teil, das in der Ersatzteilliste aufgeführt ist, um sicherzustellen, dass dieser Standard eingehalten

wird, und geben Sie acht, die Verdrahtungsart in ihren ursprünglichen Zustand zurück zu versetzen, weil das einen Einfluss auf die elektromagnetische Abstrahlung/Störsicherheit haben kann.

## BILDRÖHRE

1. Die Leitungsausgangsstufe kann Spannungen von mehr als 25 kV entwickeln; wenn die Höchstspannungskappe entfernt werden muss, entladen Sie die Anode zum Gehäuse über einen hochohmigen Widerstand, bevor Sie sie aus der Bildröhre entfernen.
2. Hochspannung sollte immer auf den festgelegten Wert des Gehäuses beschränkt bleiben und nicht mehr. Betrieb bei höherer Spannung kann zum Versagen der Bildröhre oder zu hoher Spannungszufuhr führen und kann unter Umständen auch Röntgenstrahlung hervorbringen, die leicht über dem Konstruktionsniveau liegt. Die Hochspannung darf auf keinen Fall 29 kV am Gehäuse überschreiten (außer bei Projektionsfernsehern).
3. Die Hauptquelle der Röntgenstrahlung im Produkt ist die Bildröhre. Die Bildröhre, die für die oben erwähnte Funktion in diesem Gehäuse benutzt wird, ist eine Spezialkonstruktion zur Begrenzung der Röntgenstrahlung. Um den Schutz vor der Röntgenstrahlung zu behalten, ersetzen Sie bitte die Röhre durch denselben Typ wie den ursprünglichen von HITACHI zugelassenen.
8. Halten Sie die Bildröhre bei der Handhabung vom Körper weg. Sie dürfen die Bildröhre nur dann installieren, entfernen oder handhaben, wenn Sie eine nicht splitternde Schutzbrille tragen. Personen ohne derartigen Schutz sollten ferngehalten werden, solange Bildröhren gehandhabt werden.

## LASER

Wenn das Produkt einen Laser enthält, setzen Sie sich keinesfalls direkt dem Strahl aus, wenn die Abdeckung geöffnet ist oder wenn die Verriegelung versagt.



# Contents

Safety .....	1
ENGLISH .....	1
FRANÇAIS .....	2
DEUTSCH .....	3
Contents .....	4
Lead Free Solder .....	6
Specifications .....	7
General Specifications .....	7
Features ; .....	8
Service Data .....	9
Block Diagrams .....	16
AVC to PDP Block Diagram .....	16
AVC Block Diagram .....	17
AVC Power Block Diagram .....	18
Major Connectors .....	19
Monitor Block Diagram .....	20
Schematic Drawing Descriptions .....	21
Schematic Page 1 ; Tuner / Video Chroma .....	21
Schematic Page 2 ; Sound / AV3 Control .....	23
Schematic Page 3 ; Interface Board (component input, progressive sync separation, centre audio channel) .....	25
Schematic Page 4 ; Power Circuit (Voltage Regulator) / Level Shifter .....	27
Schematic Page 5 ; Micro Controller .....	28
Schematic Page 6 ; COMB Filter / SVHS Output .....	29
Schematic Page 7 ; SCART / FC-MSC Connection .....	30
Schematic; AVC Power Supply .....	32
Schematic Drawings .....	33
Schematic Sheet 1 .....	33
Schematic Sheet 2 .....	34
Schematic Sheet 3 .....	35
Schematic Sheet 4 .....	36
Schematic Sheet 5 .....	37
Schematic Sheet 6 .....	38
Schematic Sheet 7 .....	39
AV Power Schematic .....	40
AV Control Schematic .....	41
Signal / Sound Sheet 1 .....	42
Signal / Sound Sheet 2 .....	43
Signal / Sound Sheet 3 .....	44
Signal / Sound Sheet 4 .....	45
Filter, LED, Switch & Speakers .....	46
Circuit Boards .....	47
AV Board Side A .....	47
AV Board Side B .....	48
AV Power Side A .....	49
AV Power Side B .....	50
Signal / Sound Board Side A .....	51
Signal / Sound Board Side B .....	52
Filter, LEDs, Speaker PCBs .....	53
Troubleshooting Flow Charts .....	54

AV Power - 1 .....	54
AV Power - 2 .....	55
AV Power - 3 .....	56
AV Circuit.....	57
Assembly Drawings .....	58
Audio / Video.....	58
Wiring for Audio / Video Components .....	59
Monitor Front View .....	60
Monitor Rear View .....	61
32 inch Monitor Wiring A .....	62
32 inch Monitor Wiring B.....	63
42 inch Monitor Wiring A .....	64
42 inch Monitor Wiring B.....	65
24way Digital Interface Cable Connection.....	66
Microprocessor Pins.....	67
Connections to FC4.....	69
PCB Connectors.....	72
Replacement Parts.....	73
Signal / Sound Board .....	73
Filter Board .....	75
32PD3000 .....	76
42PD3000 .....	77
Questions & Answers .....	79

# Lead Free Solder

This product uses lead free (unleaded) solder to help preserve the environment. Please read these instructions before attempting any soldering work.

**Caution:** Always wear safety glasses to prevent fumes or molten solder from getting into the eyes. Lead free solder can splatter at high temperatures (600 °C).

- **Lead free solder indicator**

Printed circuit board Assemblies using lead free solder shown below are engraved with an "F" following Board Name.

- **Properties of lead free solder**

The melting point of lead free solder is 40-50 °C higher than one of leaded solder.

- **When servicing solder**

- Solder with an alloy composition of Sn-3.0Ag-0.5Cu or Sn-0.7Cu is recommended.
- Although servicing with leaded solder is possible, there are a few precautions that have to be taken.(Not taking these precautions may cause the solder not to harden properly and lead to consequent malfunctions.)

- **Precautions when using leaded solder**

- Remove all lead free solder from soldered joints when replacing components.
- If leaded solder should be added to existing lead free joints, mix in the leaded solder thoroughly after the lead free solder has been completely melted (do not apply the soldering iron without adding solder).

## When servicing soldering iron

A soldering iron with a temperature setting capability (temperature control function) is recommended.

The melting point of lead free solder is higher than one of leaded solder. Use a soldering iron that maintains a high stable temperature (large heat capacity), and that allows temperature adjustment according to the part being serviced, to avoid poor servicing performance.

## Recommended soldering iron:

Soldering iron with temperature control function (temperature range: 320-450 °C)

## Recommended temperature range per part:

Soldering Part	Soldering iron temperature
PCB with surface mount devices	320 °C ±30 °C
PCB without surface mount devices	380 °C ±30 °C
Chassis, metallic shield, etc.	420 °C ±30 °C

## PCBs which use lead free solder

- FC4PDP board (AVC block)
- SIGNAL/SOUND board (MONITOR block)
- SP terminal L/R board, FILTER board, LED board (MONITOR block)

# Specifications

## General Specifications

Item	Spec	
	32PD3000 (PDP;32PD3000E+AVC;AV3000E)	42PD3000 (PDP;42PD3000E+AVC;AV3000E)
PDP panel	32" (ALSI for mat) Plasma display panel (16:9) , resolution 852(H) x1024(V)	42" (ALSI for mat) Plasma display panel (16:9) , resolution 1024(H) x1024(V)
Display size	976(W) x 258(D) x 580(H) unit: mm	1233(W) x 300(D) x 713(H) unit: mm
Sound output level	Max. 10W x 2 (6 ohm)	Max. 12W x 2 (6 ohm)
Speaker	4 x 16 cm corn type x 2	???
Power supply	AC 220 - 240 V 50Hz	AC 220 - 240 V 50Hz
Power consumption	PDP 260W (stand-by <2W) AVC 30W, (stand-by <2W)	PDP 360W (stand-by <2W) AVC 30W, (stand-by <2W)
Colour system	PAL/SECAM/NTSC4.43/NTSC3.58/PAL60	PAL/SECAM/NTSC4.43/NTSC3.58/PAL60
Sound system	I/B.G.H/LL'	I/B.G.H/LL'
Tuning freq.	45MHz ~ 889MHz, VHF low/VHF high/Hyper/UHF	45MHz ~ 889MHz, VHF low/VHF high/Hyper/UHF
Position selection	100 (0~99) positions. Plus channel direct (C--/S-) and frequency direct (---.--MHz)	100 (0~99) positions. Plus channel direct (C--/S-) and frequency direct (---.--MHz)
PC input signal	Horizontal freq. 24KHz ~ 109KHz / Vertical freq. 50Hz ~ 85Hz	Horizontal freq. 24KHz ~ 109KHz / Vertical freq. 50Hz ~ 85Hz
	Analogue RGB, input voltage 0.7Vpp/1.0Vpp selectable H/V separate sync (TTL level) *** sound input ; common with AV3 or AV4	Analogue RGB, input voltage 0.7Vpp/1.0Vpp selectable H/V separate sync (TTL level) *** sound input ; common with AV3 or AV4
AV input	SCART101 (CVBS/SVHS/LR sound) - AV1	SCART101 (CVBS/SVHS/LR sound) - AV1
	SCART102 (CVBS/RGB/LR sound) - AV2	SCART102 (CVBS/RGB/LR sound) - AV2
	SCART100 (CVBS/RGB/LR sound) - AV3	SCART100 (CVBS/RGB/LR sound) - AV3
	COMPONENT (YPbPr/YCbCr/LR sound) - AV4	COMPONENT (YPbPr/YCbCr/LR sound) - AV4
	Front AV (CVBS/SVHS/LR sound) - FRONT	Front AV (CVBS/SVHS/LR sound) - FRONT
	CENTRE AUDIO input	CENTRE AUDIO input
Dimensions	PDP : 974(W) x 256(D) x 578(H) including monitor stand unit: mm	PDP : 1030(W) x ??(D) x 636(H) including monitor stand unit: mm
	AVC : 430(W) x 293(D) x 121(H) unit: mm	AVC : 430(W) x 293(D) x 121(H) unit: mm
Weight	PDP : 28.7kg (net)	PDP : 40.2kg (net)
	AVC : 3.2kg (net)	AVC : 3.2kg (net)
Remote control batteries	2 x Hitachi R6P(G) * equivalent 'AA'	2 x Hitachi R6P(G) * equivalent 'AA'

**Features ;**

<b>852x1024 resolution,</b>	Created by 32" ALIS Plasma display panel
<b>1024x1024 resolution,</b>	Created by 37/42" ALIS Plasma display panel
<b>Advanced progressive &amp; 1024 interlace,</b>	Which materializes detailed picture without flicker
<b>TruBass by SRS,</b>	Which gives real bass sound
<b>Thin (9cm) and light,</b>	By separating monitor from tuner box (AVC). It is possible to hang monitor on the wall.
<b>Swivel stand attached monitor,</b>	Which is possible to swivel at 30deg toward left and right.
<b>3 Scarts connectors plus front AV input,</b>	Which can be connected with DVD, Set Top Box, VCR and Camera at the same time.
<b>1 Component input,</b>	Which allows YPbPr and PCbCr to be received. Signal is automatically identified.
<b>PC input connection,</b>	Supporting various PC display format.

# Service Data

Soft version			issue 1			New panel		01-Nov-02	V1.A4		
	back ground CYAN means to separate data on each 32/37/42"							RED figures are new default values			
1st	2nd	3rd	4th	5th	32" values hex	37" values hex	42" values hex	functions	Device		
SVC>	TUN>	ADC			read	read	read	AGC data			
		OPT			80	80	80	option for destination			
		AGC			adj	adj	adj	AGC adjustment			
		BIF			adj	adj	adj	AFC adjustment for all except L'			
		LIF			adj	adj	adj	AFC adjustment for L'			
		AFC			read	read	read	AFC level indication			
	PC>	PC1>	GSW		01	01	01	gamma switch	PDP	10	D3:D2
			BLP		7F	7F	7F	Black Level (RGB);user brightness control for PC	FC4	5	D07:D00
			COP		7F	7F	7F	Contrast (RGB)	FC4	6	D07:D00
		PC2>	MBC		7F	7F	7F	main brightness centre	FC4	7	D15:D08
			MCC		5D	5D	5D	main contrast centre	FC4	7	D07:D00
			MXB		6C	6C	6C	brightness Max. for wide NORMAL/REAL	FC4	7	D15:D08
			BGP		00	00	00	Brightness/Gradation	PDP	27&28	D2&D2
			CCP		00	00	00	NTSC/EBU	PDP	27&28	D1&D1
			DCP		01	01	01	Tracking correction	PDP	27&28	D0&D0
		PC3>	PSE		01	01	01	PC power save enable/disable	FC4	4	D08
			PST		0F	0F	0F	power save timer			
	SIG>	FLA			OK	OK	OK	CAUTION !! Never press OK unless proper signal is displayed. auto signal level adjustment activates.			
		MAX			read	read	read	MAX signal level on screen			
		MIN			read	read	read	min. signal level on screen			
		SNR			read	read	read	FC noise level indication			
	MIS>	RGB >	COL>	R1	read	read	read	Gain R ; warm	PDP Read/Write	13/20	1st D7:D0 / D7:D0
				G1	read	read	read	Gain G ; warm	PDP Read/Write	13/21	2nd D7:D0 / D7:D0
				B1	read	read	read	Gain B ; warm	PDP Read/Write	13/22	3rd D7:D0 / D7:D0
			NOM>	R2	read	read	read	Gain R ; normal	PDP Read/Write	12/17	1st D7:D0 / D7:D0
				G2	read	read	read	Gain G ; normal	PDP Read/Write	12/18	2nd D7:D0 / D7:D0
				B2	read	read	read	Gain B ; normal	PDP Read/Write	12/19	3rd D7:D0 / D7:D0
			WAM>	R3	read	read	read	Gain R ; cool	PDP Read/Write	11/14	1st D7:D0 / D7:D0
				G3	read	read	read	Gain G ; cool	PDP Read/Write	11/15	2nd D7:D0 / D7:D0
				B3	read	read	read	Gain B ; cool	PDP Read/Write	11/16	3rd D7:D0 / D7:D0
			GSW		01	01	01	gamma switch	PDP	10	D3:D2
			WHB		00	00	00	white balance 0;cool, 1;normal, 2;warm --- synchronizing with user operation MENU	PDP	9	D3:D2&D1:D0
			HAPC		01	01	01	Q.MODE + Heat APC	PDP	28	D4:D3
			BRN		01	01	01	burn in mode	PDP	10	D5:D4

1st	2nd	3rd	4th	5th	32" values hex	37" values hex	42" values hex	functions	Device		
			APC		00	00	00	APC switch 0;High APC, 1;Normal	PDP	10	D7
		M10>	M01>	F01(4:3)	01	01	01	wide mode selected by 16:9 key (0;on, 1;off)	4:3		
				F02(16:9)	00	00	00	wide mode selected by 16:9 key (0;on, 1;off)	WIDE SCREEN		
				F03(C16:9L)	00	00	00	wide mode selected by 16:9 key (0;on, 1;off)	LETTERBOX		
*** MAX 8 items on one page.				F04(T16:9L)	01	01	01	wide mode selected by 16:9 key (0;on, 1;off)	T16:9L		
				F05(14:9)	01	01	01	wide mode selected by 16:9 key (0;on, 1;off)	14:9		
			M02>	F06(C14:9L)	00	00	00	wide mode selected by 16:9 key (0;on, 1;off)	C14:9L		
				F07(T14:9L)	01	01	01	wide mode selected by 16:9 key (0;on, 1;off)	T14:9L		
				F08(PAN)	01	01	01	wide mode selected by 16:9 key (0;on, 1;off)	PANORAMIC		
				F09(14:9LS)	00	00	00	wide mode selected by 16:9 key (0;on, 1;off)	14:9 ZOOM		
				PCA	02	02	02	PC wide mode 0;NORMAL, 1;REAL, 2;FULL	FC4	3	D17:D16
		*** LTI ***	M03>	HE1	02	02	02	Horizontal enhancer DYNAMIC	FC4	2	D20:D19
		picture mode		HE2	03	03	03	Horizontal enhancer DYNAMIC-VIDEO	FC4	2	D20:D19
				HE3	00	00	00	Horizontal enhancer NATURAL	FC4	2	D20:D19
				HE4	00	00	00	Horizontal enhancer NATURAL-VIDEO	FC4	2	D20:D19
				HE5	01	01	01	Horizontal enhancer CINEMA	FC4	2	D20:D19
				HE6	02	02	02	Horizontal enhancer CINEMA-VIDEO	FC4	2	D20:D19
				HET	00	00	00	<b>Horizontal enhancer TEXT</b>	FC4	2	D20:D19
		*** LTI ***	M04	VE1	03	03	03	Vertical enhancer DYNAMIC	FC4	2	D22:D21
		picture mode		VE2	03	03	03	Vertical enhancer DYNAMIC-VIDEO	FC4	2	D22:D21
				VE3	03	03	03	Vertical enhancer NATURAL	FC4	2	D22:D21
				VE4	03	03	03	Vertical enhancer NATURAL-VIDEO	FC4	2	D22:D21
				VE5	03	03	03	Vertical enhancer CINEMA	FC4	2	D22:D21
				VE6	03	03	03	Vertical enhancer CINEMA-VIDEO	FC4	2	D20:D19
				VET	00	00	00	<b>Vertical enhancer TEXT</b>	FC4	2	D22:D21
			M05>	BGT	00	00	00	Brightness/Gradation	PDP	27&28	D2&D2
				CCT	00	00	00	NTSC/EBU	PDP	27&28	D1&D1
				TCR	01	01	01	Tracking correction W/B Warm & Norm	PDP	27&28	D0&D0
				DCC	00	00	00	Tracking correction W/B Cool	PDP	27&28	D0&D0
				WBC	00	00	00				
				BSO	1F	1F	1F	Black Stretch gain offset ON&MID	FC4	7	D21:D16
		*** "PDP2_service05" no.52		SPC	00	00	00	PinP(PC W) picture contrast offset	FC4	7	D07:D00
			M06>	PHC	80	80	80	Colour phase centre	FC4	8	D07:D00
				PHU	1A	1A	1A	PAL HUE offset (not available if AV2 is RGB)	FC4	8	D07:D00
				NHU	20	20	20	NTSC HUE offset	FC4	8	D07:D00
				YU6	1D	1D	1D	YCbCr / YPbPr @ 60Hz HUE offset	FC4	8	D07:D00

1st	2nd	3rd	4th	5th	32" values hex	37" values hex	42" values hex	functions	Device		
				YU5	1A	1A	1A	YCbCr / YPbPr @ 50Hz HUE offset	FC4	8	D07:D00
				THU	1F	1F	1F	TEXT HUE offset	FC4	8	D07:D00
				YHU	1F	1F	1F	Components Hue for Asian option	FC4	8	D07:D00
				FPB	00	00	00	FAVOURITE Peak Brightness 0;Peak, 1:Normal	PDP	10	D6
		M11>	M11>	BLT	7F	7F	7F	Black level (RGB)	FC4	5	D07:D00
				MBC	80	80	80	main brightness centre : (50) is used in AUTO adjustment	FC4	7	D15:D08
				MBX	80	80	80	brightness centre TEXT	FC4	7	D15:D08
				COT	7F	7F	7F	Contrast (RGB)	FC4	6	D07:D00
				MCC	89	89	89	main contrast centre	FC4	7	D07:D00
				MCX	70	70	70	contrast centre TEXT	FC4	7	D07:D00
				SAC	40	40	40	Saturation centre NTSC/PAL/RGB/YCbCr TV	FC4	8	D14:D08
				SAX	50	50	50	Saturation centre TEXT	FC4	8	D14:D08
		*** CTI ***	M12>	CE1	1F	1F	1F	C-Vert/Horiz enhancer gain DYNAMIC-TV	FC4	2	D12:D08
		picture mode		CE2	10	10	10	C-Vert/Horiz enhancer gain DYNAMIC-VIDEO	FC4	2	D12:D08
				CE3	1F	1F	1F	C-Vert/Horiz enhancer gain NATURAL-TV	FC4	2	D12:D08
				CE4	10	10	10	C-Vert/Horiz enhancer gain NATURAL-VIDEO	FC4	2	D12:D08
				CE5	1F	1F	1F	C-Vert/Horiz enhancer gain CINEMA-TV	FC4	2	D12:D08
				CE6	10	10	10	C-Vert/Horiz enhancer gain CINEMA-VIDEO	FC4	2	D12:D08
				CET	10	10	10	C-Vert/Horiz enhancer gain TEXT	FC4	2	D12:D08
				YET	00	00	00	sharpness centre - TEXT	FC4	2	D04:D00
			M13>	YE1	1F	1F	1F	sharpness DYNAMIC-TV	FC4	2	D04:D00
				YE2	12	12	12	sharpness DYNAMIC-TV-VIDEO	FC4	2	D04:D00
				YE3	12	12	12	sharpness NATURAL-TV	FC4	2	D04:D00
				YE4	12	12	12	sharpness NATURAL-VIDEO	FC4	2	D04:D00
				YE5	12	12	12	sharpness CINEMA-TV	FC4	2	D04:D00
				YE6	12	12	12	sharpness CINEMA-VIDEO	FC4	2	D04:D00
				YE7	12	12	12	sharpness centre-FAVOURITE-TV	FC4	2	D04:D00
				YE8	12	12	12	sharpness centre-FAVOURITE-VIDEO	FC4	2	D04:D00
		*** YNR ***	M14>	YI1	01	01	01	YNR input gain DYNAMIC	FC4	2	D07:D05
		picture mode		YI2	01	01	01	YNR input gain DYNAMIC-VIDEO	FC4	2	D07:D05
				YI3	01	01	01	YNR input gain NATURAL	FC4	2	D07:D05
				YI4	01	01	01	YNR input gain NATURAL-VIDEO	FC4	2	D07:D05
				YI5	01	01	01	YNR input gain CINEMA	FC4	2	D07:D05
				YI6	01	01	01	YNR input gain CINEMA-VIDEO	FC4	2	D07:D05
				YIT	01	01	01	YNR input gain TEXT	FC4	2	D07:D05
		*** CNR ***	M15>	CI1	00	00	00	CNR input gain DYNAMIC	FC4	2	D15:D13
		picture mode		CI2	00	00	00	CNR input gain DYNAMIC-VIDEO	FC4	2	D15:D13
				CI3	00	00	00	CNR input gain NATURAL	FC4	2	D15:D13
				CI4	00	00	00	CNR input gain NATURAL-VIDEO	FC4	2	D15:D13
				CI5	00	00	00	CNR input gain CINEMA	FC4	2	D15:D13



1st	2nd	3rd	4th	5th	32" values hex	37" values hex	42" values hex	functions	Device		
				CI6	00	00	00	CNR input gain CINEMA-VIDEO	FC4	2	D15:D13
				CIT	00	00	00	<b>CNR input gain TEXT</b>	FC4	2	D15:D13
			M16	OSH	109	109	109	H position - OSD			
				OSV	40	40	40	V position - OSD			
				OTH	190	190	190	H position - TEXT			
				OTV	40	40	40	V position - TEXT			
				SUR	00	00	00	SURROUND ON:1, OFF:0			
				CMB	01	01	01	COMB FILTER ON:1, OFF:0			
		M12>	M21>	DCN	3E	3E	3E	DYNAMIC Contrast			
				DBR	80	80	80	DYNAMIC Brightness			
				DCL	50	50	50	DYNAMIC Colour			
[ ];menu related value - decimal it is ok to display by hex e.g. [32] is centre of CONTRAST e.g. [63] is MAX for CONTRAST.				DPB	00	00	00	DYNAMIC Peak Brightness 0;Peak, 1:Normal	PDP	10	D6
				DCM	02	02	02	DYNAMIC Contrast Mode NORM;0, AUTO;1, DYN;2			
				DBS	1F	1F	1F	DYNAMIC Black stretch 0;off, 01~3F; level			
				DWB	00	00	00	DYNAMIC White Balance 0:cool, 1:normal, 2:warm			
				DFT	01	01	01	DYNAMIC Film Mode 0;on, 1;off			
			M22>	NCN	38	38	38	NATURAL Contrast			
				NBR	80	80	80	NATURAL Brightness			
				NCL	48	48	48	NATURAL Colour			
				NPB	00	00	00	NATURAL Peak Brightness 0;Peak, 1:Normal	PDP	10	D6
				NCM	01	01	01	NATURAL Contrast Mode NORM;0, AUTO;1, DYN;2			
				NBS	1A	1A	1A	NATURAL Black stretch 0;off, 01~3F; level			
				NWB	00	00	00	NATURAL White Balance 0:cool, 1:normal, 2:warm			
				NFT	01	01	01	NATURAL Film Mode 0;on, 1;off			
			M23>	TCN	3E	3E	3E	CINEMA Contrast			
				TBR	80	80	80	CINEMA Brightness			
				TCL	50	50	50	CINEMA Colour			
				TPB	00	00	00	CINEMA Peak Brightness 0;Peak, 1:Normal	PDP	10	D6
				TCM	00	00	00	CINEMA Contrast Mode NORM;0, AUTO;1, DYN;2			
				TBS	1F	1F	1F	CINEMA Black stretch 0;off, 01~3F; level			
				TWB	01	01	01	CINEMA White Balance 0:cool, 1:normal, 2:warm			
				TFT	00	00	00	CINEMA Film Mode 0;on, 1;off			
			M24>	DGS	01	01	01	DYNAMIC Gamma Select			
				NGS	01	01	01	NATURAL Gamma Select			
				TGS	01	01	01	CINEMA Gamma Select			
				PGS	02	02	02	PERSONAL Gamma Select			
				DPM	00	00	00	DYNAMIC Picture Mode			
				NPM	01	01	01	NATURAL Picture Mode			
				TPM	01	01	01	CINEMA Picture Mode			
				PPM	02	02	02	PERSONAL Picture Mode			
		M13>	M31>	MVB	0B	0B	0B	MUSIC Volume Balance			

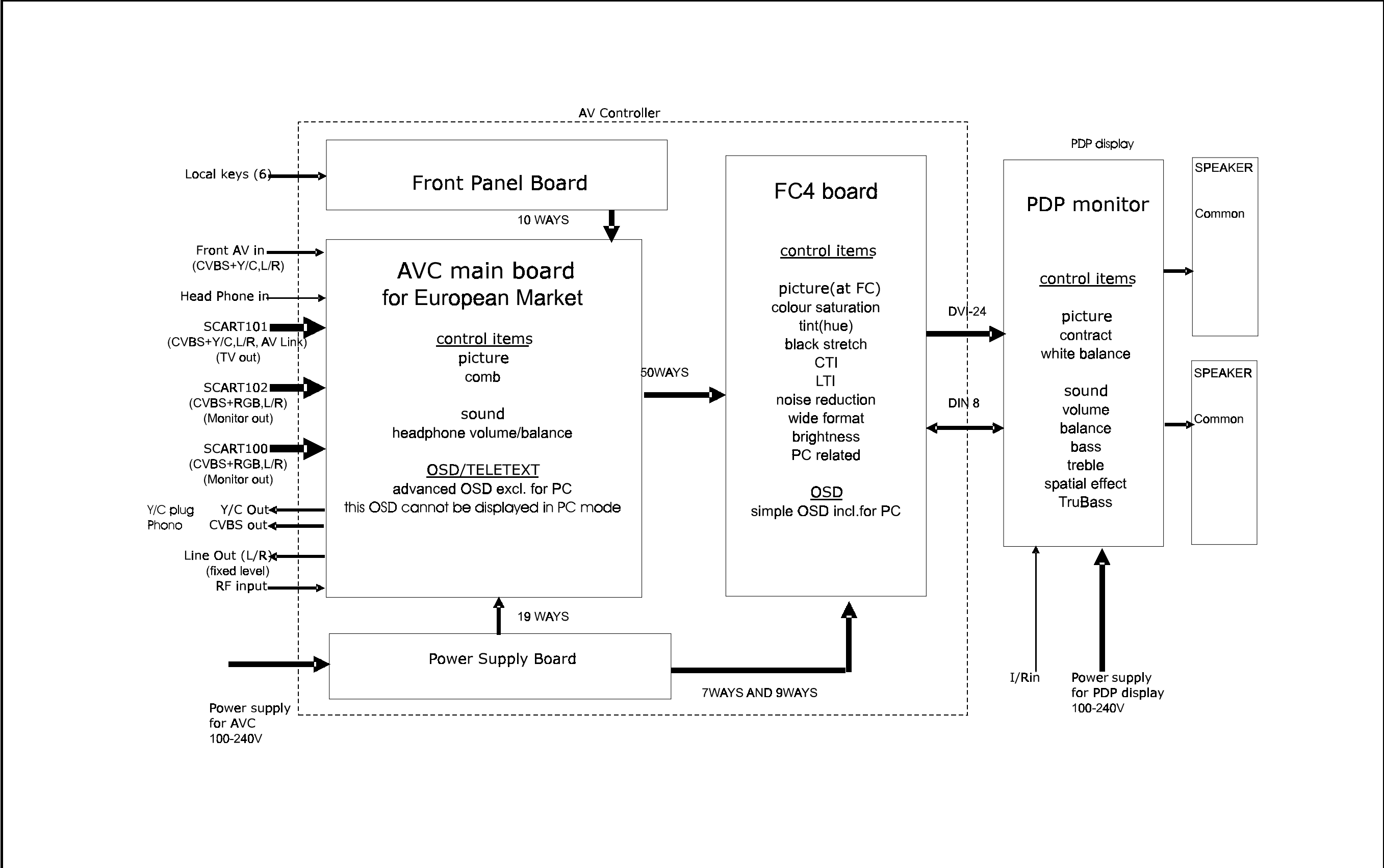
1st	2nd	3rd	4th	5th	32" values hex	37" values hex	42" values hex	functions	Device		
[ ]; menu related value - decimal it is ok to display by hex e.g. [11] is centre of Balance e.g. [21] is MAX for Treble.				<b>MTR</b>	<b>0B</b>	<b>0B</b>	<b>0B</b>	MUSIC Treble			
				<b>MBA</b>	<b>0B</b>	<b>0B</b>	<b>0B</b>	MUSIC Bass			
				<b>MTB</b>	<b>03</b>	<b>03</b>	<b>03</b>	MUSIC TruBass 0;off, 1;low, 2;mid, 3;high			
				<b>MMS</b>	<b>01</b>	<b>01</b>	<b>01</b>	MUSIC Matrix Surround 0;off, 1;on			
			<b>M32&gt;</b>	<b>NVB</b>	<b>0B</b>	<b>0B</b>	<b>0B</b>	SPEECH Volume Balance			
				<b>NTR</b>	<b>10</b>	<b>10</b>	<b>10</b>	SPEECH Treble			
				<b>NBA</b>	<b>0B</b>	<b>0B</b>	<b>0B</b>	SPEECH Bass			
				<b>NTB</b>	<b>00</b>	<b>00</b>	<b>00</b>	SPEECH TruBass 0;off, 1;low, 2;mid, 3;high			
				<b>NMS</b>	<b>00</b>	<b>00</b>	<b>00</b>	SPEECH Matrix Surround 0;off, 1;on			
			<b>M33&gt;</b>	<b>TVB</b>	<b>0B</b>	<b>0B</b>	<b>0B</b>	CINEMA Volume Balance			
				<b>TTR</b>	<b>10</b>	<b>10</b>	<b>10</b>	CINEMA Treble			
				<b>TBA</b>	<b>10</b>	<b>10</b>	<b>10</b>	CINEMA Bass			
				<b>TTB</b>	<b>02</b>	<b>02</b>	<b>02</b>	CINEMA TruBass 0;off, 1;low, 2;mid, 3;high			
				<b>TMS</b>	<b>01</b>	<b>01</b>	<b>01</b>	CINEMA Matrix Surround 0;off, 1;on			
		<b>M14&gt;</b>	<b>M41 &gt;</b>	<b>TSW</b>	<b>00</b>	<b>00</b>	<b>00</b>	TDA9178 fitted or not. 0;not fitted, 1;fitted			
TDA9178 option  Those values are fixed in this menu.  No individual parameter on TC1~TC4 can be set.				<b>TC1</b>	<b>01</b>	<b>01</b>	<b>01</b>	TDA9178 address 00	TDA9178	00	D07:D00
				<b>TC2</b>	<b>10</b>	<b>10</b>	<b>10</b>	TDA9178 address 01	TDA9178	01	D05:D00
				<b>TC3</b>	<b>00</b>	<b>00</b>	<b>00</b>	TDA9178 address 02	TDA9178	02	D07:D00
				<b>TC4</b>	<b>00</b>	<b>00</b>	<b>00</b>	TDA9178 address 03	TDA9178	03	D05:D00
				<b>ABS</b>	<b>00</b>	<b>00</b>	<b>00</b>	TDA9178 address 04	TDA9178	04	D05:D00
			<b>M42 &gt;</b>	<b>NLA</b>	<b>00</b>	<b>00</b>	<b>00</b>	TDA9178 address 05	TDA9178	05	D05:D00
				<b>VGM</b>	<b>20</b>	<b>20</b>	<b>20</b>	TDA9178 address 06	TDA9178	06	D05:D00
				<b>PKG</b>	<b>00</b>	<b>00</b>	<b>00</b>	TDA9178 address 07	TDA9178	07	D05:D00
				<b>STP</b>	<b>00</b>	<b>00</b>	<b>00</b>	TDA9178 address 08	TDA9178	08	D05:D00
				<b>CRG</b>	<b>00</b>	<b>00</b>	<b>00</b>	TDA9178 address 09	TDA9178	09	D05:D00
				<b>LWD</b>	<b>00</b>	<b>00</b>	<b>00</b>	TDA9178 address 0A	TDA9178	0A	D05:D00
WB OFFSET OFF/1/2/3 option			<b>M43&gt;</b>	<b>1RD</b>	<b>14</b>	<b>14</b>	<b>14</b>	White balance offset 1; R_DRIVE MAX			
				<b>1GD</b>	<b>0F</b>	<b>0F</b>	<b>0F</b>	White balance offset 1; G_DRIVE			
				<b>1BD</b>	<b>00</b>	<b>00</b>	<b>00</b>	White balance offset 1; B_DRIVE			
				<b>1RG</b>	<b>1F</b>	<b>1F</b>	<b>1F</b>	White balance offset 1; R_GAMMA			
				<b>1GG</b>	<b>1F</b>	<b>1F</b>	<b>1F</b>	White balance offset 1; G_GAMMA			
				<b>1BG</b>	<b>1F</b>	<b>1F</b>	<b>1F</b>	White balance offset 2; B_GAMMA			
			<b>M44&gt;</b>	<b>2RD</b>	<b>00</b>	<b>00</b>	<b>00</b>	White balance offset 2; R_DRIVE CENTRE			
				<b>2GD</b>	<b>00</b>	<b>00</b>	<b>00</b>	White balance offset 2; G_DRIVE			
				<b>2BD</b>	<b>00</b>	<b>00</b>	<b>00</b>	White balance offset 2; B_DRIVE			
				<b>2RG</b>	<b>1F</b>	<b>1F</b>	<b>1F</b>	White balance offset 2; R_GAMMA			
				<b>2GG</b>	<b>1F</b>	<b>1F</b>	<b>1F</b>	White balance offset 2; G_GAMMA			
				<b>2BG</b>	<b>1F</b>	<b>1F</b>	<b>1F</b>	White balance offset 2; B_GAMMA			

1st	2nd	3rd	4th	5th	32" values hex	37" values hex	42" values hex	functions	Device		
			M45>	3RD	00	00	00	White balance offset 3; R_DRIVE MIN			
				3GD	0F	0F	0F	White balance offset 3; G_DRIVE			
				3BD	29	29	29	White balance offset 3; B_DRIVE			
				3RG	1F	1F	1F	White balance offset 3; R_GAMMA			
				3GG	1F	1F	1F	White balance offset 3; G_GAMMA			
				3BG	1F	1F	1F	White balance offset 3; B_GAMMA			
		M15>  -  add 27 bytes	M51 >	CEA	0D	0D	0D	C-Vert/Horiz enhancer gain DYNAMIC-RGB/YCbCr			
				CEB	0D	0D	0D	C-Vert/Horiz enhancer gain DYNAMIC-YPbPr			
				CEC	0D	0D	0D	C-Vert/Horiz enhancer gain NATURAL-RGB/YCbCr			
				CED	0D	0D	0D	C-Vert/Horiz enhancer gain NATURAL-YPbPr			
				CEE	0D	0D	0D	C-Vert/Horiz enhancer gain CINEMA-RGB/YCbCr			
				CEF	0D	0D	0D	C-Vert/Horiz enhancer gain CINEMA-YPbPr			
				CEM	10	10	10	CTI MID level in menu (FAVOURUTE)			
			M52>	YEA	10	10	10	sharpness DYNAMIC- RGB/YCbCr			
				YEB	10	10	10	sharpness DYNAMIC-YPbPr			
				YEC	08	08	08	sharpness NATURAL- RGB/YCbCr			
				YED	02	02	02	sharpness NATURAL-YPbPr			
				YEE	10	10	10	sharpness CINEMA- RGB/YCbCr			
				YEF	10	10	10	sharpness DYNAMIC-YPbPr			
				YE9	10	10	10	sharpness centre on FAVOURITE-RGB/YCbCr			
				YE0	10	10	10	sharpness centre on FAVOURITE-YPbPr			
			M53 >	LC1	1F	1F	1F	Favourite + TV ; last CTI			
				LC2	10	10	10	Favourite + Video ; last CTI			
				LC3	0D	0D	0D	Favourite + RGB/YCbCr ; last CTI			
				LC4	0D	0D	0D	Favourite + YPbPr ; last CTI			
			M54>	DCV	50	50	50	DYNAMIC + VIDEO/RGB ; colour			
				NCV	3E	3E	3E	NATURAL + VIDEO/RGB ; colour			
				TCV	40	40	40	CINEMA + VIDEO/RGB ; colour			
				SAV	3E	3E	3E	FAVOURITE + VIDEO/RGB ; colour			
				DCO	58	58	58	DYNAMIC + YCbCr/YPbPr ; colour			
				NCO	4B	4B	4B	NATURAL + YCbCr/YPbPr ; colour			
				TCO	50	50	50	CINEMA + YCbCr/YPbPr ; colour			
			-	SAO	44	44	44	FAVOURITE + YCbCr/YPbPr ; colour			
	OPT>	OB0			78	78	78	option byte 1			

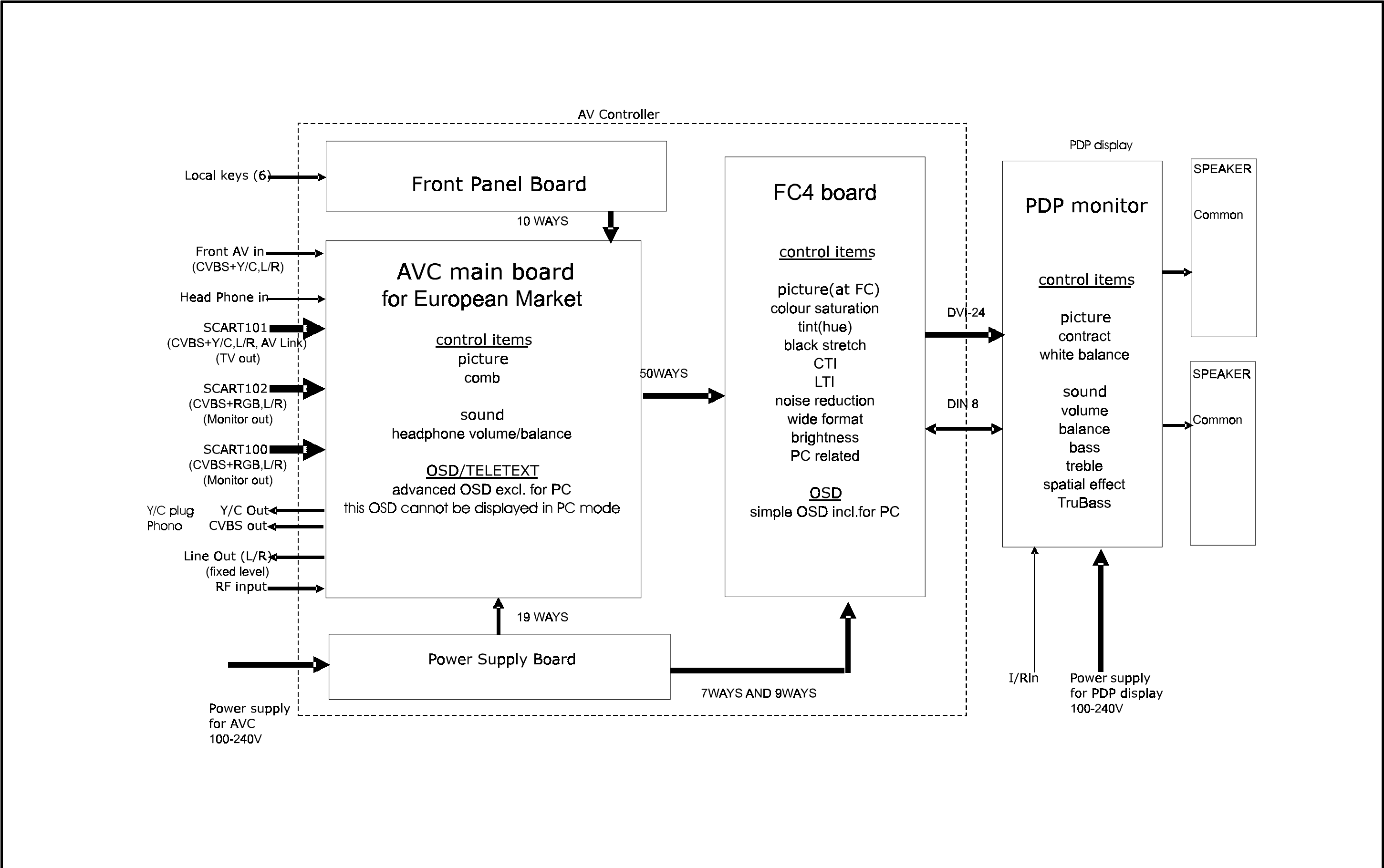
1st	2nd	3rd	4th	5th	32" values hex	37" values hex	42" values hex	functions	Device		
		OB1			80	80	80	option byte 2			
		EMG			0	0	0	0:Normal, 1:Macrovision improved			
		AV DELAY			OFF	OFF	OFF				
		RGB Comb			OFF	OFF	OFF	ON;Go through Comb, OFF;skip Comb It is affected to SVC>MIS>MI1>M11=HP2/4			
		FC4						Enters FC4 sub menu			
		ASIAN OPTIONS>	AV2		RGB	RGB	RGB	RGB or YUV			
			INITIAL INSTALL		ON	ON	ON	INITIAL INSTALL menu is on or off			
			COUNTRY SELECT		ON	ON	ON	Country select is on or off			
			LANGUAGE SELECT		ON	ON	ON	European language select is on or off			
			TELETEXT		ON	ON	ON	TELETEXT is working or not			
	HOT>	OPT			0	0	0	hotel option, see sheet HOTEL OPTION			
		VOL		bar	centre	centre	centre	Maximum volume limited in Hotel mode			
		PRG			1	1	1	start up position number			
	VRS>	MN			read	read	read	Model name			
		MSU			read	read	read	MSU micro version number			
		PDU			read	read	read	PDP micro version number	-		
		PWT			read	read	read	PDP working hour			
	E2>	E2R			OK	OK	OK	EEPROM reset			
		E2F			OK	OK	OK	EEPROM factory setting			
		E2S			OK	OK	OK	EEPROM is set to the shipment			
		E24			OK	OK	OK	EEPROM in FC4 is initialised			
		EXS			OK	OK	OK	escape from service menu			

# Block Diagrams

AVC to PDP Block Diagram



AVC Block Diagram

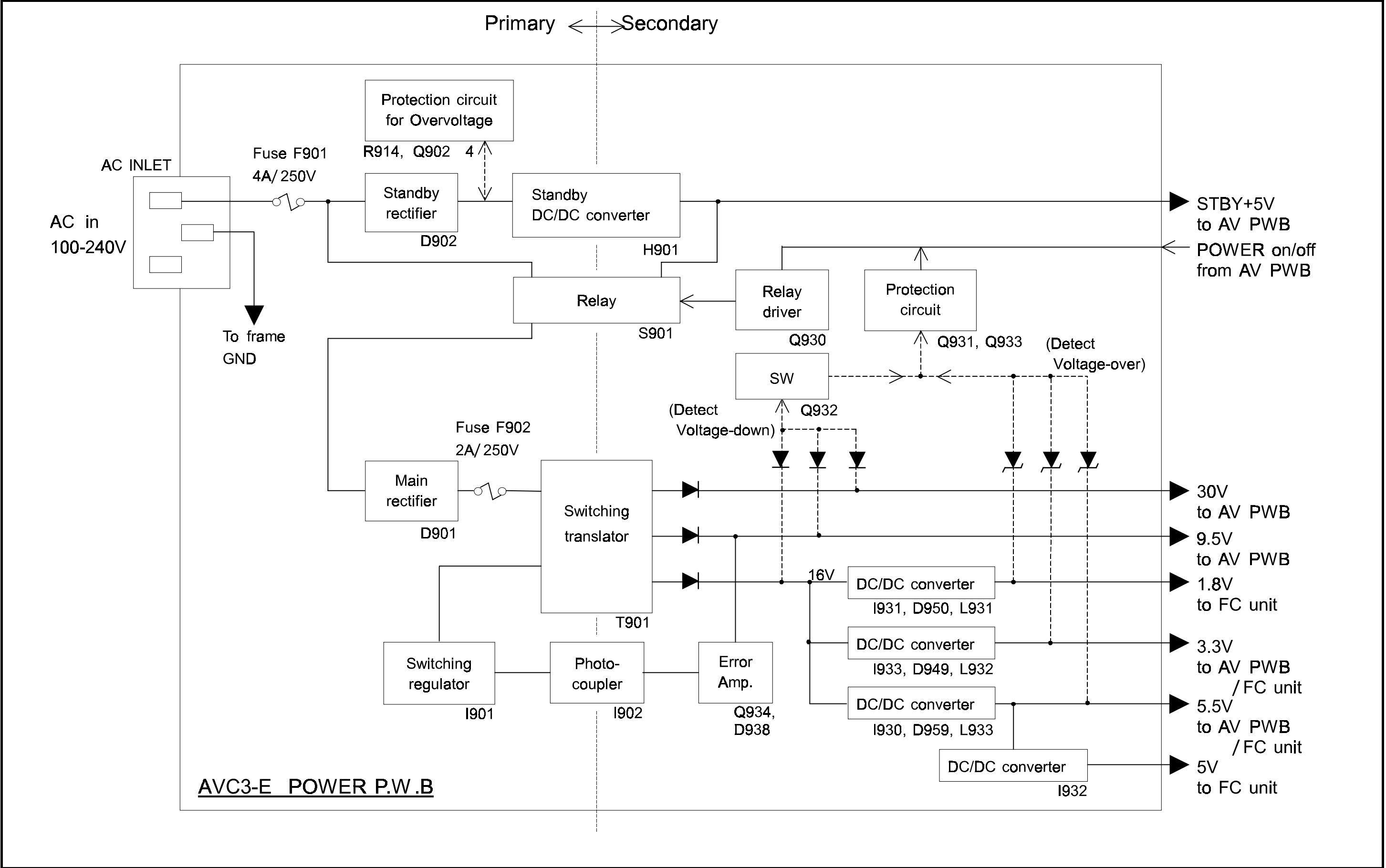


SM003

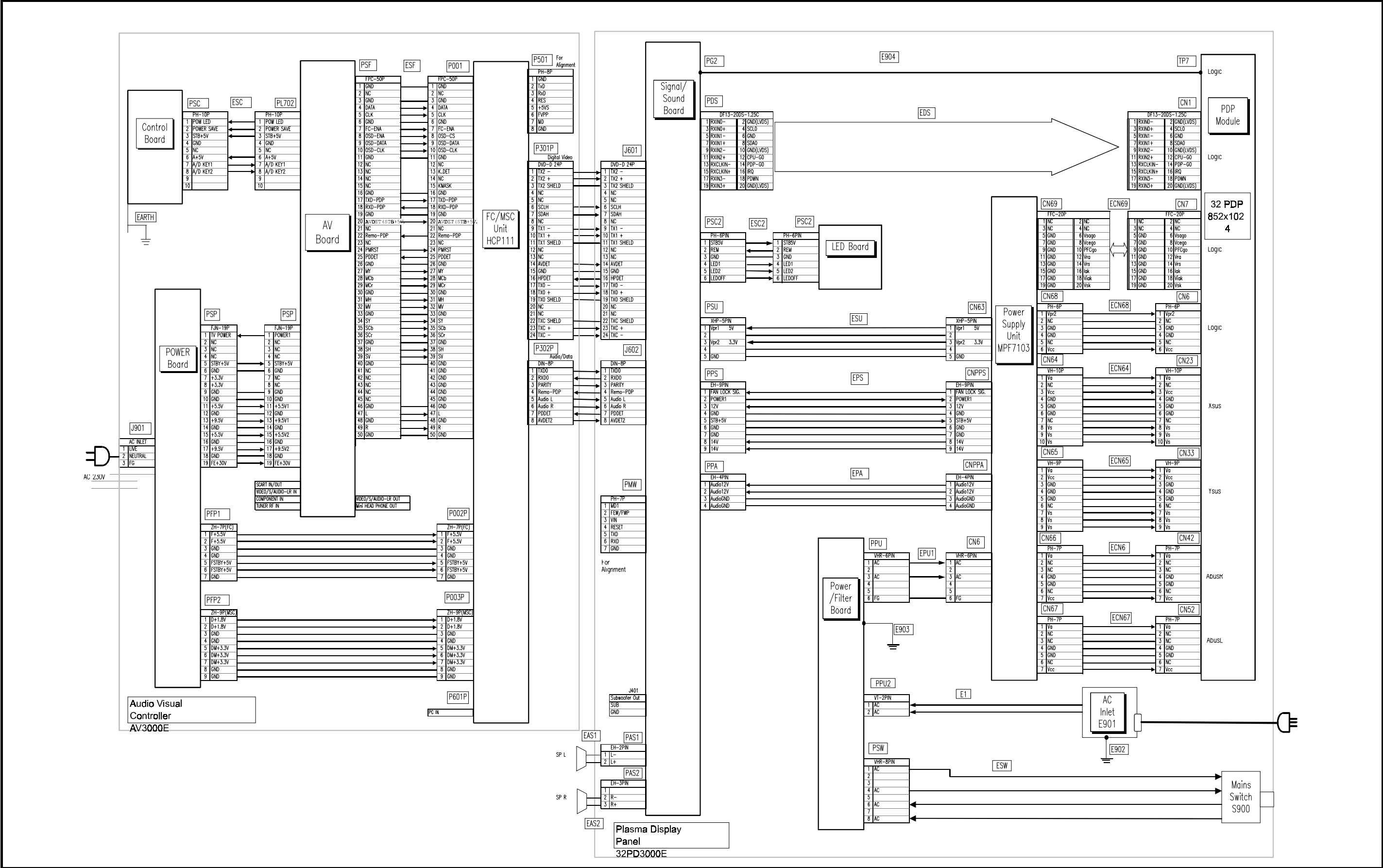
AVC to PDP Block Diagram

HITACHI

AVC Power Block Diagram



Major Connectors



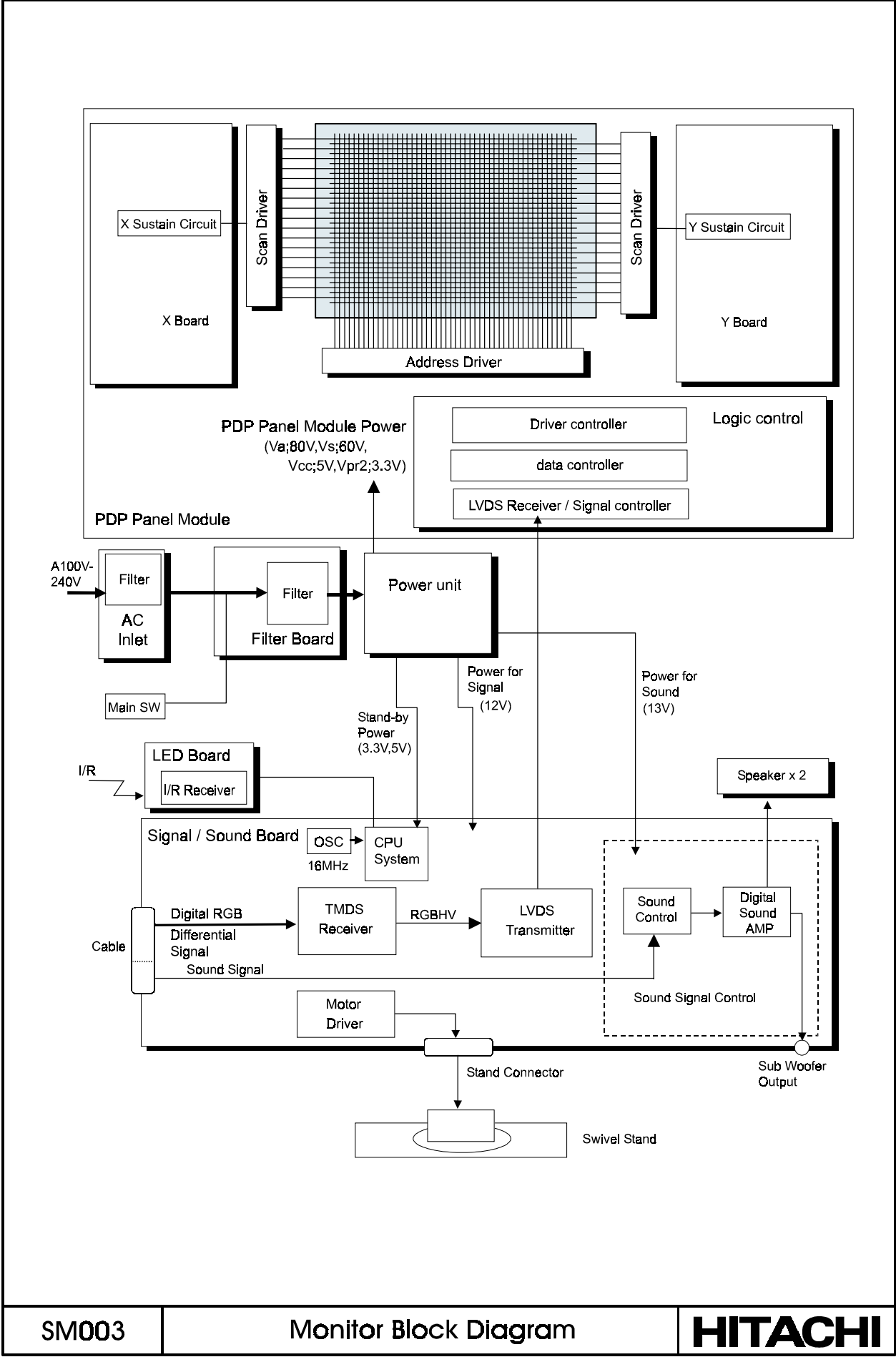
SM003

Major Connections Diagram

HITACHI



Monitor Block Diagram



# Schematic Drawing Descriptions

## Schematic Page 1 ; Tuner / Video Chroma

**TUN100** Asymmetrical type tuner ; UV1316/A 1G-3 313914716781

supply voltage ; +5V at pin 7 and +33V at pin 9

control by I2C, SDA at pin 5 and SCL at pin 4

**SAW100 K3953M** picture carrier 33.90MHz, picture to sound carrier distance 6.5MHz for standard L

**SAW101 K9456M** sound carrier 40.40MHz for standard L

VHF/UHF asymmetrical type tuner converts RF input signal to IF signal output through pin 11.

AGC voltage is supplied at pin1 from IC100 pin62

IF output is going through buffer Q101 to SAW filter SAW100 for VIF at pin 2 and 3 of IC100 and to SAW101 for SIF at pin 63 and 64.

**IC100** Video chroma and video switch TDA9321H

supply voltage ; +8V at pin 11 and 48 (AS)

control by I2C, SDA at pin 47 and SCL at pin 46

**TR100** TPWA01B - nominal centre freq. Fn1=6.0MHz and fn2=6.5MHz

**TR101** TPWA04B - nominal centre freq. Fn1=5.5MHz and fn2=5.742MHz

**X100** 3.58MHz X'tal

**X101** 4.43MHz X'tal

### \* IF demodulator and video chroma

Demodulated video signal is output from pin 10 going to sound traps

There are two sound traps, TR100 for I/L signal and TR101 for BG, output from which are switched by SOUND-SWITCH from IC301 pin 5

After group delay correction at pin 13, it is connected to pin 14 where TV picture is supplied into video switch.

The TV signal from pin13 is also connected to SCART1 as TV signal output.

Quasi Split Sound converted from SIF input is output at pin 5 to connect with sound decoder IC301

H and V sync pulses are output at pin 60 and 61 to go to FC/MSC for synchronization to convert progressive scan. H pulse must be inverted by Q126.

When selecting one of video signal in video switch of IC100, CVBS signal is going to COMB filter if the video is CVBS PAL/NTSC format.

Then Y/C separated signal is coming back at pin 28 and 29. The clock must be provided from pin 30.

The video or Y/C signal selected pass through video chroma section and finally converted to YUV format at pin 49, 50, 51

IC100 is supplied 4.43MHz and 3.58MHz clock from crystal X100 and X101, which is automatically selected according to the signal received.

2 RGB inputs are also switched at the last stage in IC100. RGB signals are also converted to YUV.

### \* video switch

input	pin 14	TV signal input
	pin 16	CVBS - SCART102 (AV2) input
	pin 18	CVBS - SCART100 (AV3) input
	pin 20	CVBS/Y - SCART101 (AV1) input
	pin 21	C - SCART101 (AV1) input
	pin 23	CVBS/Y - front AV (FRONT) input
	pin 24	C - front AV (FRONT) input
	pin 28	Y - from COMB filter
	pin 29	C - from COMB filter
input control	pin 15	SCART102 (AV2) pin8 detection
	pin 17	SCART100 (AV3) pin8 detection
	---	SCART101 (AV1) pin8 detection is done by micro IC704 pin28
output	pin 26	go to COMB filter and phono video output
	pin 32	go to micro for TELETEXT decoding
	pin 34	go to SCART102(AV2) and SCART100(AV3) as monitor video output
output	pin 20	L/L' switch for SAW filter in/out at SAW101
control	pin 22	micro switch to switch SVHS or CVBS for front AV input

## Schematic Page 2 ; Sound / AV3 Control

### IC301 NICAM/A2 sound decoder and audio switch ; MSP3410

supply voltage ; +5V at pin 18 and pin 51

control by ; I2C, SDA at pin 10 and SCL at pin 9

X300 18.432MHz

#### \* NICAM/A2 decoder and sound control

QSS signal is coming from IC100 to pin 58 through amplifier Q308/307. The signal level at pin 58 should be 0.1 ~ 0.8Vpp.

Sound output L/R at pin 28 and 29 are connected through amplifier Q310/Q312 for L and Q309/Q311 for R to adjust 500mVrms at PL700 pin 4 and 6 In the condition of AV sound input 500mVrms, FM modulation 54%

Sound output L/R at pin 28 and 29 are also connected through IC300 TDA7433 and IC303 to headphone.

#### \* Audio switch

input	pin 52	SCART101(AV1) sound L input
	pin 53	SCART101(AV1) sound R input
	pin 49	SCART102(AV2) sound L input
	pin 50	SCART102(AV2) sound R input
	pin 46	SCART100(AV3) sound L input
	pin 47	SCART100(AV3) sound R input
	pin 43	front AV (FRONT) sound L inout
	pin 44	front AV (FRONT) sound R inout
	pin 55	mono sound input from IC100
output	pin 37	SCART101(AV1) sound L output
	pin 36	SCART101(AV1) sound R output
	pin 34	SCART102(AV2) / SCART3(AV3) sound L output
	pin 33	SCART102(AV2) / SCART3(AV3) sound R output
	pin 29	Speaker / Headphone/phone sound L output
	pin 28	Speaker / Headphone/phone sound R output
output	pin 5	SOUND SWITCH for trap of TV input signal

### IC300 Basic audio processor ; TDA7433

supply voltage ; +8V at pin 17

control by ; I2C, SDA at pin 19 and SCL at pin 18

Monitor sound L/R outputs for speaker are connected headphone and phone out. IC300 contributes separate volume control

input	pin 6	Audio sound L input
	pin 5	Audio sound R input

output	pin 16	Phono sound L output
	pin 15	Phono sound R output
	pin 14	Headphone sound L output
	pin 13	Headphone sound R output

**IC303      Headphone sound amplifier ; TDA2822D**  
**supply voltage ; +6.5V at pin 2**

Headphone sound L/R controlled its level by IC300 are amplified.

**\*\*\*\***  
**front AV video switch**  
**PL300      connector for front control PCB**

At pin 12 of PL700, CVBS from AV3 is coming.

At pin 11 of PL700, Y from AV3SVHS is coming

At pin 9 indication of SVHS connector insertion is supplied to micro IC704 pin38 and then it controls micro-switch from pin22 of IC100 in order to select Y from pin11 of PL700 (micro-sw=H) or to select CVBS from pin12 of PL700 (micro-sw=L)

At pin 15 of PL700, C from AV3SVHS is coming to connect to pin 24 of IC100

**IC302**  
**(OPTION)      TDA8440 is the option in the future. This is not used for this model.**

## Schematic Page 3 ; Interface Board (component input, progressive sync separation, centre audio channel)

**IC08**            **Sync separation for Component (progressive) input ; TA1370**  
**supply voltage ; +9V at pin 11**  
**control by ; I2C, SDA at pin 21 and SCL at pin 22**  
**XC01**            **50KHz**

Sync separation for progressive YPbPr input (50Hz and 60Hz) are carried out at TA1370.

Input video signal is specifically given from AV4 and connected at pin 26 through clamping circuit constituted with QC25~QC28

Sync separation for all input signal other than Progressive input are carried out at TDA9321 (page1)

TA1370 includes switch of sync signal (H and V) between H/V input (pin 1 and pin2) from TDA9321 and internal sync separation.

TA1370 outputs H at pin16 and V at pin 28, which are connected to PSF for FC4 board. There are 2 inputs of the connector for each main and sub.

H output at pin 16 on TA1370 is fed to IC10 to shorten H pulse waveform to avoid jittering.

**IC02/IC03**       **YUV/RGB switch ; TA1287**  
**supply voltage ; +9V at pin 16**  
**control by ; DC voltage at pin 9/10/11 and matrix at pin 16**

input            IC02    YUV; Main signal  
                  IC03    YUV; from IC02  
                  YUV ; at pin 1/2/3, Y:1Vpp (incl.sync), UV:0.3Vpp  
                  RGB ; at pin 6/7/8, 0.7Vpp

output           IC02    connect to IC03  
                  IC03    connect to FC4 through buffers  
                  YUV ; at pin13/14/15, Y:1Vpp (incl.sync), UV:0.3Vpp  
                  matrix control of RGB input (YUV can also input. In this case, matrix control should be through)  
                  IC02    0V; through  
                  IC03    always 1.6V:RGB --> YUV

control           IC02    0V; external (Components input)  
                  IC03    0V; Video

**IC04/IC05/IC06 Analogue switch ; BU4066**  
**supply voltage +9V at pin 14**

- IC04 Audio switch, main L/R or AV4 (components input) L/R. main L/R comes from MSP3410 audio switch.
- IC05 Video switch, Front video or AV4 (in case of YCbCr normal components), which is connected to TDA9321 for sync separation
- IC06 Audio switch, Centre sound or AV4 (components input) L/R. Output goes to IC04 to switch another audio input.

**IC07                    Analogue Switch for Sub video ; BU4053**  
**supply voltage ; +9V at pin 16**

2 inputs, main YUV from IC03 and RGB from micro (TELETEXT), are switched and connected to sub video input for FC4

This is enabled when TV+TEXT is selected (SUB TELETEXT), and when PC window is selected (SUB VIDEO)

**IC09                    I/O expanders ; M62320FP**  
**supply voltage ; +5V at pin 13**  
**control by ; I2C, SDA at pin 3 and SCL at pin 2**

	connect to	L	H
<b>D00 pin 4</b> component video	IC02, IC05	components input	other than components
<b>D01 pin 5</b> Matrix	IC02	RGB --> YUV	through
<b>D02 pin 6</b> PC	IC07	Not PC mode (SUB TEXT)	PC mode (SUB video in PCW)
<b>D03 pin 7</b> OSD-blank	IC03	kill OSD	OSD enabled
<b>D04 pin 9</b> Cinema	IC06, IC04	Audio centre not selected	Audio centre selected
<b>D05 pin 10</b> Clamp-source	IC05	CP from TA1370	SC from TDA9321
<b>D06 pin 11</b> TV/TEXT	IC03	TEXT (select RGB input)	TV
<b>D07 pin 12</b> N.C.			

## Schematic Page 4 ; Power Circuit (Voltage Regulator) / Level Shifter

### Power supply connector PSP from Power Supply board

1	POWER1	Power ON/Stand-by control	H;ON, L;Stand-by
2	N.C.		
3	N.C.		
4	N.C.		
5	+5VSTB	Stand-by 5V for micro controller circuit	
6	GND		
7	N.C.		
8	N.C.		
9	GND		
10	GND		
11	+5.5V1	5.5V supply 1	
12	GND		
13	+9.5V1	9.5V supply 1	
14	GND		
15	+5.5V2	5.5V supply 2	
16	GND		
17	+9.5V2	9.5V supply2	
18	GND		
19	FE+30V	30V supply for tuner	

### Voltage regulators

<b>I603</b>	BA06T	Input +9.5V2 - Output +8V For video chroma circuit (page1)
<b>IC602</b>	SI-3050LSA	Input +5.5V1 - Output +5VFE For tuner (page1)
<b>IC603</b>	SI-3050LSA	Input +5.5V2 - Output +5V For audio processor circuit (page2), comb filter (page6)
<b>IC601</b>	SI-3033LSA	Input +5VSTB - Output 3.3VSTB For micro controller circuit
<b>Q602</b>	TK11125M	Input +5VSTB - Output 2.5VSTB For micro controller circuit
<b>IC604</b>	BA09FP	Input +9.5V1 - Output +9V For interface circuit (page 3)

### Level shift for control buses

<b>Q607</b>	BSS138	3WB-DATA to change from 3V3 to 5V
<b>Q603</b>	2SC2412K	3WB-CLOCK to invert with 5V range
<b>Q604</b>	2SC2412K	FC-ENABLE to invert with 5V range
<b>Q605</b>	2SC2412K	MSC-ENABLE to invert with 5V range
<b>Q614</b>	BSS138	1900TX to change from 3V3 to 5V



## Schematic Page 5 ; Micro Controller

- IC704** Micro controller ; SDA5550  
 supply voltage ; +3.3VSTB at pin 8, 40, 75 and 92 and +2.5VSTB at pin 6, 22, 56 and 73  
 control through I<sup>2</sup>C ; SDA3v3 at pin 52 and SCL3v3 at pin 47  
 3 wire bus ; 3WB-clock3v3 at pin 41 and 3WB-data3v3 at pin 46  
 FC-enable at pin 42  
 MSC-enable at pin 43  
 OSD enable at pin 44  
 control through/by AVlink ; output at pin 16 and input at pin 33  
 RS232C (19200bps); TxD3v3 at pin 32 and RxD3v3 at pin 38  
 control by I/R in ; at pin 34
- X700** 6MHz X'tal
- IC700** EEPROM ; M24C16W (16kbits)  
 supply voltage ; +3.3VSTB at pin 8  
 control by I2C ; SDA3v3 at pin 5 and SCL3v3 at pin 6 and WC3v3 at pin 7
- IC701** Flash memory for software stored ; AT49LV002N (256Kbytes)  
 supply voltage ; +3.3VSTB at pin 32  
 control by address and data buses
- IC701B** option not fitted.
- IC703** SRAM ; SMT K6T1008V2E-GB70000 or equivalent (128kbytes)  
 supply voltage ; +3.3VSTB at pin 32  
 control by address and data buses
- IC705** RESET IC for IC704 ; M62703SL/ML  
 supply voltage ; +3.3VSTB at pin 1

SCL3v3 and SDA3v3 are converted for 5V operation in Q700/Q701/Q705/Q706  
 OSD/TEXT RGB at pin 58/59/60 are synchronized with progressive sync pulses 2H(32KHz)  
 at pin 32 and V(50/60Hz) at pin 33  
 RGB and BLK are also converted to 5V operation at Q713/Q714/Q715 and IC707

AV link is bi-directional bus from pin 10 of SCART101, made by Q709/D701~D703. For the micro, input and output are separated.

The signal level is also converted between 3V3 in micro and 5V for SCART.

See "micro pins" for micro controller pin functions.

### FRONT PANEL BOARD connection PL702

PIN NO.	PIN NAME	PL702 IN/OUT	FUNCTIONS
1	POW LED	I	Power LED
2	POWER SAVE	I	POWER2
3	STB+5V	I	Stand-by 5V power supply
4	GND	-	GND
5	RM-IN	O	N.C.
6	A+5V	I	+5V
7	A/D KEY 2	O	Key in 1
8	A/D KEY 1	O	Key in 2
9	(BS-LED)	-	N.C.
10	(MODEM-LED)	-	N.C.
at Front Control			

**Schematic Page 6 ; COMB Filter / SVHS Output**

**IC101      COMB filter ; TC9090AF**

supply voltage ; +5V at pin 15, 18 and 27

control by I<sup>2</sup>C ; SDA at pin 8 and SCL at pin 9

CVBS from IC100 pin 26 is filtered by C800/C801/L800/C802 and connected to pin 3

Y/C separate signals output from IC101 pin 25/23 are also filtered by Q801 base circuit and Q802 base circuit

Y is amplified to adjust the level at Q119/Q120 for return signal to IC100 and SVHS Y signal output via buffer Q803

C is amplified to adjust the level at Q121/Q122 for return signal to IC100 and SVHS C signal output via buffer Q804

IC101 requires clock at pin 19 supplied from IC100.

**SVHS100   SVHS output connector**

pin	functions
1	GND
2	GND
3	C
4	Y
5	GND(SW)

**Schematic Page 7 ; SCART / FC-MSC Connection****SCART connectors**

	<b>SCART101</b>	<b>SCART102</b>	<b>SCART100</b>	
<b>pin</b>	<b>AV1</b>	<b>AV2</b>	<b>AV3</b>	<b>general spec</b>
1	sound output R	sound output R	sound output R	Audio output R ; $\leq 1\text{kohm}$ , nominal 0.5Vrms $\pm$ 3dB, max 2Vrms ; 54% modulation in FM/AM
2	sound input R	sound input R	sound input R	Audio input R ; $\geq 10\text{kohm}$ , nominal 0.5Vrms, min.0.2Vrms, max 2Vrms
3	sound output L	sound output L	sound output L	Audio output L ; $\leq 1\text{kohm}$ , nominal 0.5Vrms $\pm$ 3dB, max 2Vrms ; 54% modulation in FM/AM
4	GND	GND	GND	Audio common return
5	GND	GND	GND	Blue return
6	sound input L	sound input L	sound input L	Audio input L ; $\geq 10\text{kohm}$ , nominal 0.5Vrms, min.0.2Vrms, max 2Vrms
7	N.C.	Blue-in	Blue-in	Blue ; 75ohm, 0.7V $\pm$ 0.1V
8	switch	switch	switch	Function switch ; $\geq 10\text{kohm}$ , $\leq 2\text{nF}$ , Level 0 ; 0~2V, Level 1A : +4.5V~+7V (16:9), Level 1B : +9.5V~+12V (4:3)
9	GND	GND	GND	Green return
10	AVLINK	N.C.	N.C.	Avlink ; TTL level
11	N.C.	Green-in	Green-in	Green ; 75ohm, 0.7V $\pm$ 0.1V
12	N.C.	N.C.	N.C.	under consideration
13	GND	GND	GND	Red return
14	GND	GND	GND	Blanking return
15	C in	Red-in	Red-in	Red/C ; 75ohm, 0.7V $\pm$ 0.1V (Red), $\pm$ 3dB at 1Vpp Y signal (C)
16	N.C.	Fast Blanking	Fast Blanking	Blanking ; 75ohm, logical 0 (off) : 0~0.4V, logical 1 : +1~+3V
17	GND	GND	GND	Video output return
18	GND	GND	GND	Video input return
19	TV output	Monitor output	Monitor output	Video/Y output ; 75ohm, 1Vpp $\pm$ 3dB (sync 0.3V-3dB, +10dB)
20	CVBS/Y in	CVBS in	CVBS in	Video input ; 75ohm, 1Vpp $\pm$ 3dB (sync 0.3V-3dB, +10dB)
21	GND	GND	GND	Common return and contact 8, 10, 12

**PL700** connection with FC/MSC board 26ways connector

assuming that 1Vpp video signal with 75ohm terminated is input through SCART100 (AV3)

UV are inverted by Q609/Q612/Q610/Q613 to CbCr(U'V') at pin 25/24 and those are adjusted to the level at 1.4Vpp

Y is amplified by Q608/Q611 to adjust the level at 1.4V for signal and 0.6V for sync (2Vpp in total) at pin 26

sound level L and R at pin 6/4 should be 500mVrms on the condition that -

500mVrms audio is input through SCART100(AV3)

BG FM sound with 54% modulation is received

**PL701** connection with FC/MSC board 26 ways connector

## Schematic; AVC Power Supply

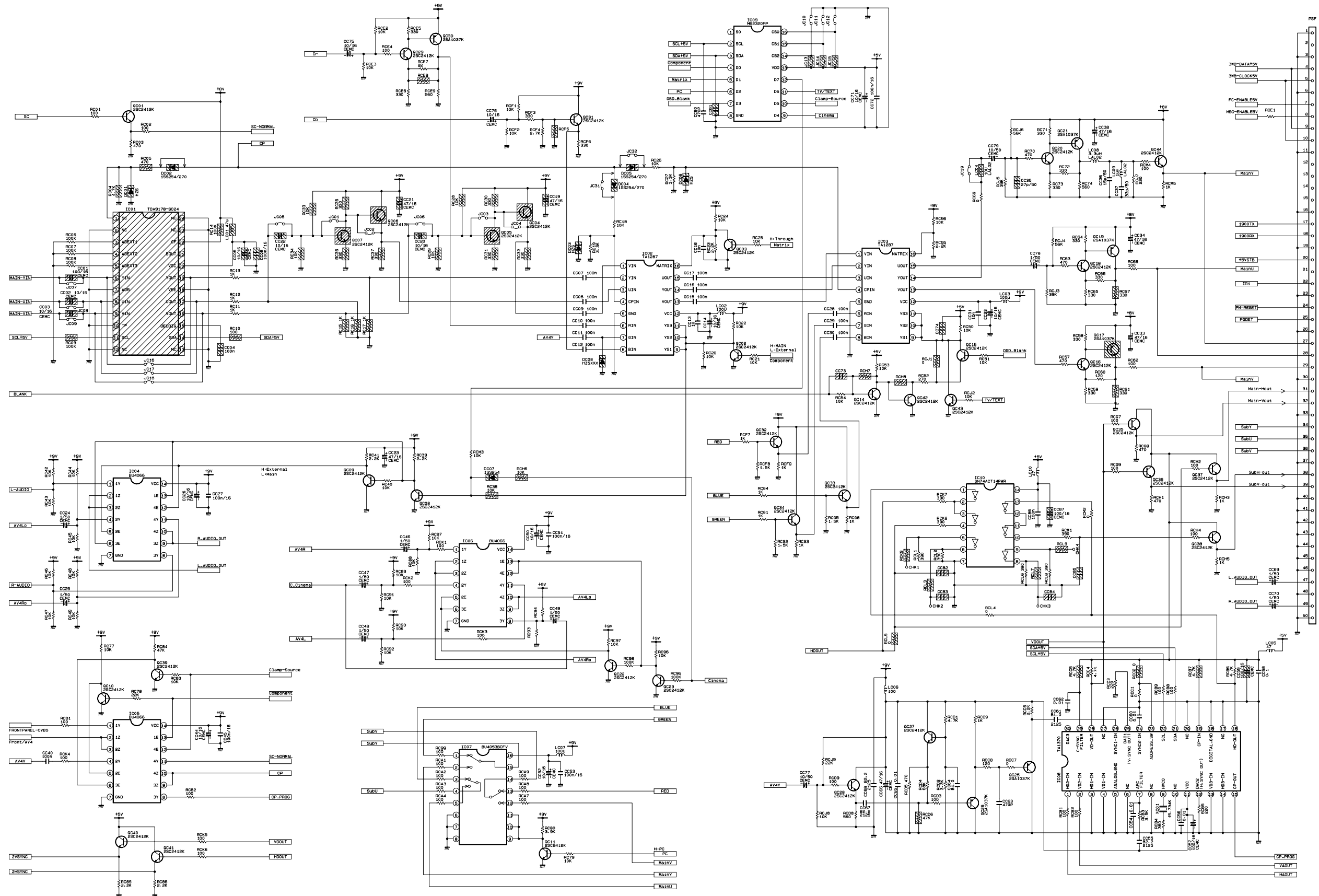
<b>I901</b>	<b>switching regulator - controller and power MOS FET ; STR-F6668B</b>	
	<b>supply voltage at pin 4 ; over +16V (start operating)</b>	
	pin 1	feedback input
	pin 2	Source of power MOS FET
	pin 3	Drain of power MOS FET
	pin 4	power supply input for controller
	pin 5	GND
<b>H901</b>	<b>DC+5V switching regulator module ; uPM0518SA</b>	
	<b>supply voltage ; DC +120+375V at pin 1</b>	
input	pin 1	DC(+) voltage input
	pin 5	DC(-) voltage input
	pin 7	feedback input-1
	pin 8	feedback input-2
output	pin 6	DC(-) voltage output
	pin 9	DC(+) voltage output
<b>I902</b>	<b>photocoupler ; TLP621</b>	
<b>I930</b>	<b>switching regulator ; SPI-8010A</b>	
	<b>supply voltage ; DC +8.5+50V at pin 11</b>	
input	pin 11	DC voltage input
	pin 15	feedback input
output	pin 7	switching output
<b>I931</b>	<b>switching regulator ; SI-8010GL</b>	
	<b>supply voltage ; DC +8+50V at pin 5</b>	
input	pin 5	DC voltage input
	pin 8	feedback input
	pin 2	output ON/OFF
output	pin 4	switching output
<b>I932</b>	<b>DC+5V series regulator ; SI-3050LSA</b>	
	<b>supply voltage ; DC +5.1+8V at pin 1,3</b>	
input	pin 1,3	DC voltage input
output	pin 7,8	DC +5V output
<b>I933</b>	<b>switching regulator ; SI-8033JD</b>	
	<b>supply voltage ; DC +5.3+40V at pin 1</b>	
input	pin 1	DC voltage input
	pin 4	feedback input
	pin 5	output ON/OFF
output	pin 2	switching output
<b>PSP</b>	<b>connector for AV P.W.B.</b>	
<b>PEP1</b>	<b>connector for FC4 unit</b>	
<b>PEP2</b>	<b>connector for FC4 unit</b>	



# AV Board Sheet 1

# HITACHI



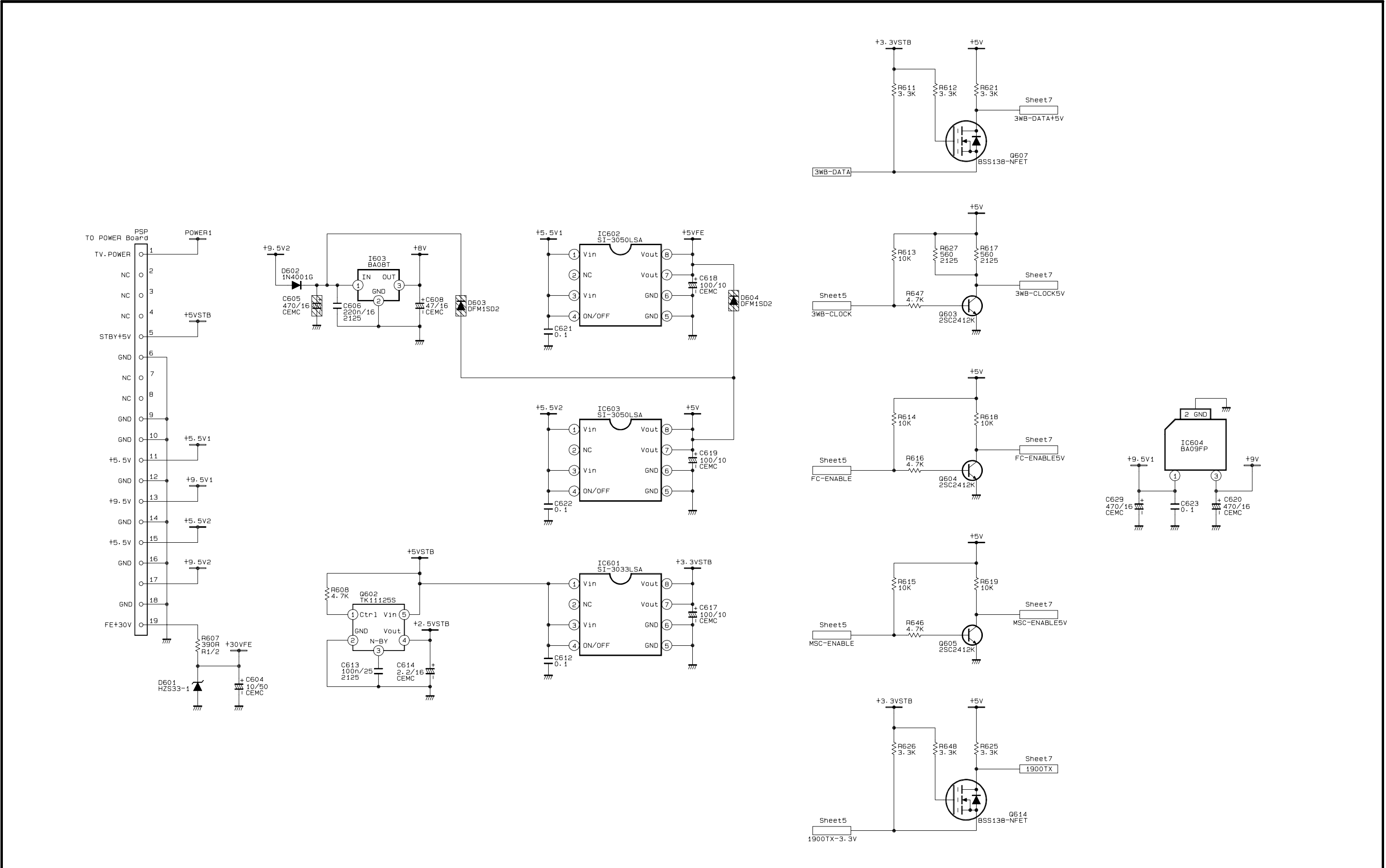


SM003

AV Board Sheet 3

HITACHI

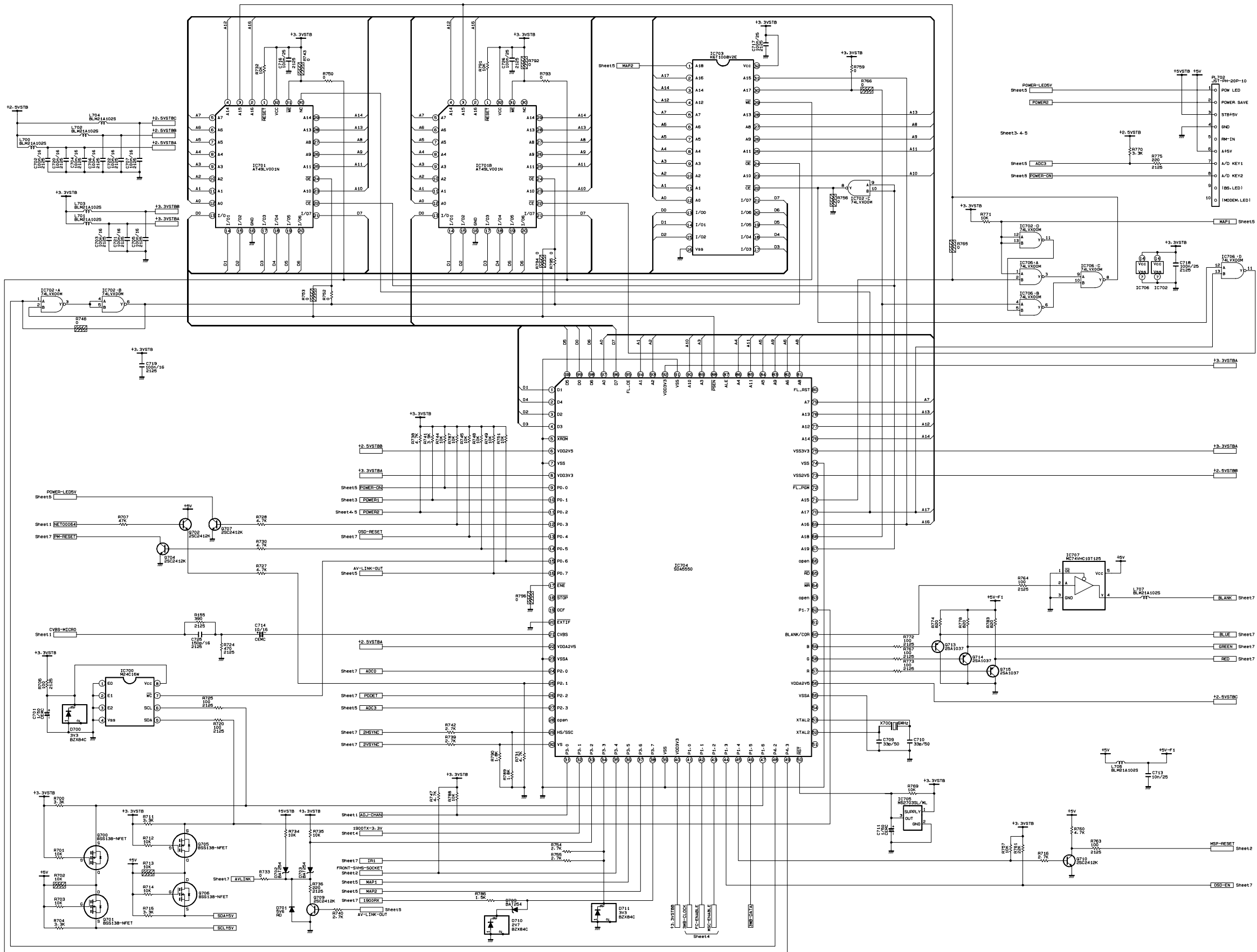




SM003

AV Board Sheet 4

HITACHI

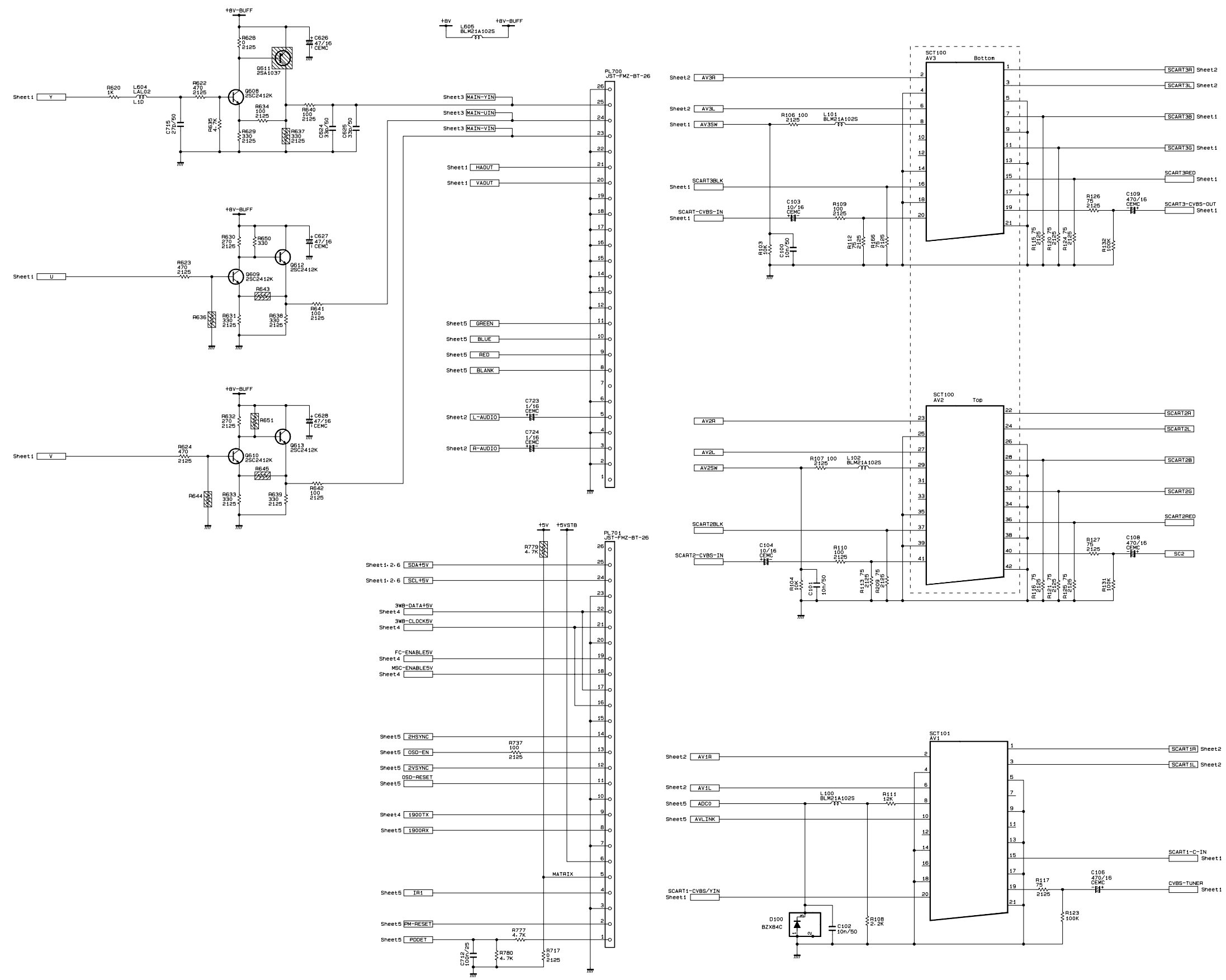


SM003

AV Board Sheet 5

HITACHI

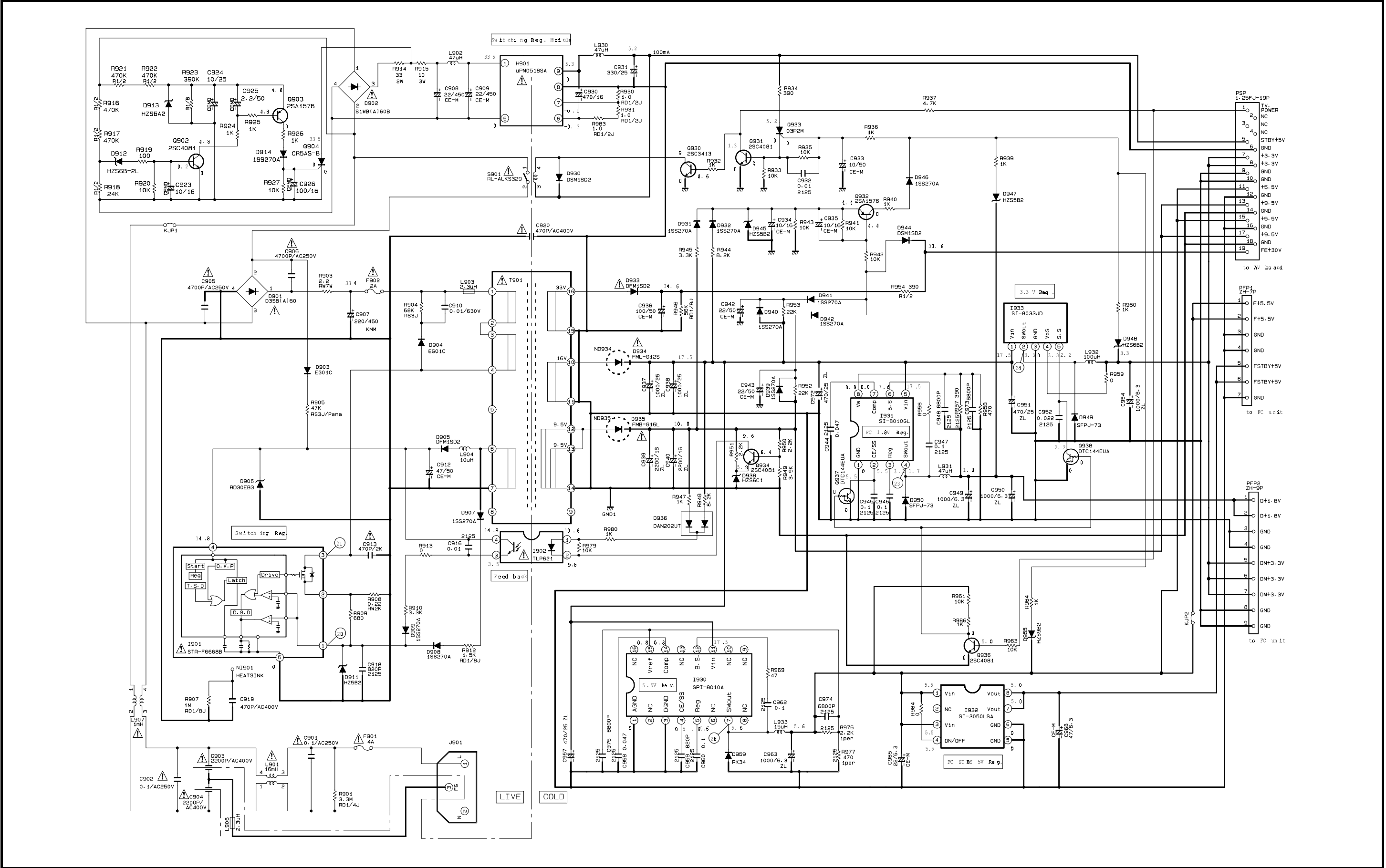




SM003

AV Board Sheet 7

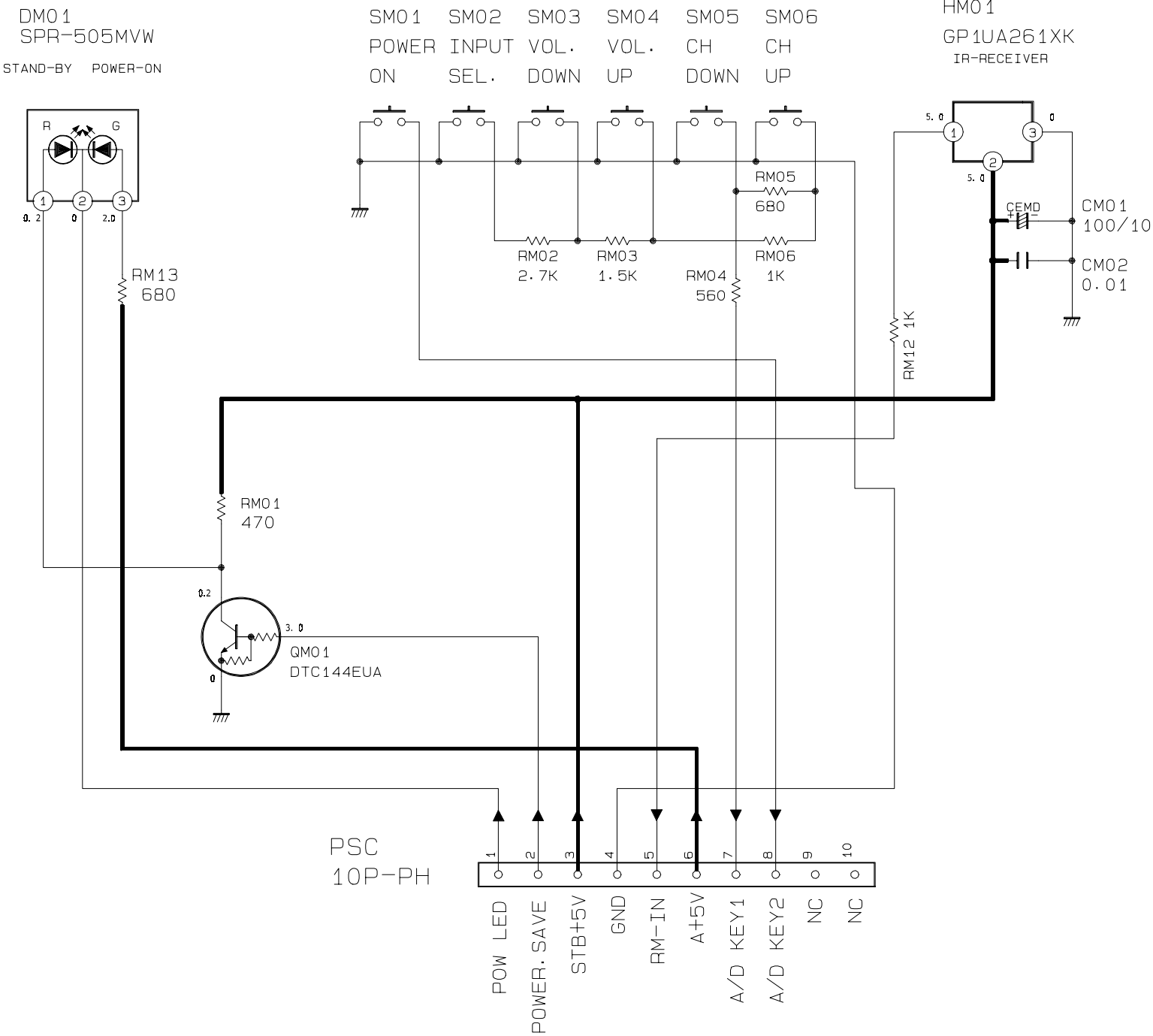
HITACHI



SM003

AV Power Circuit

HITACHI

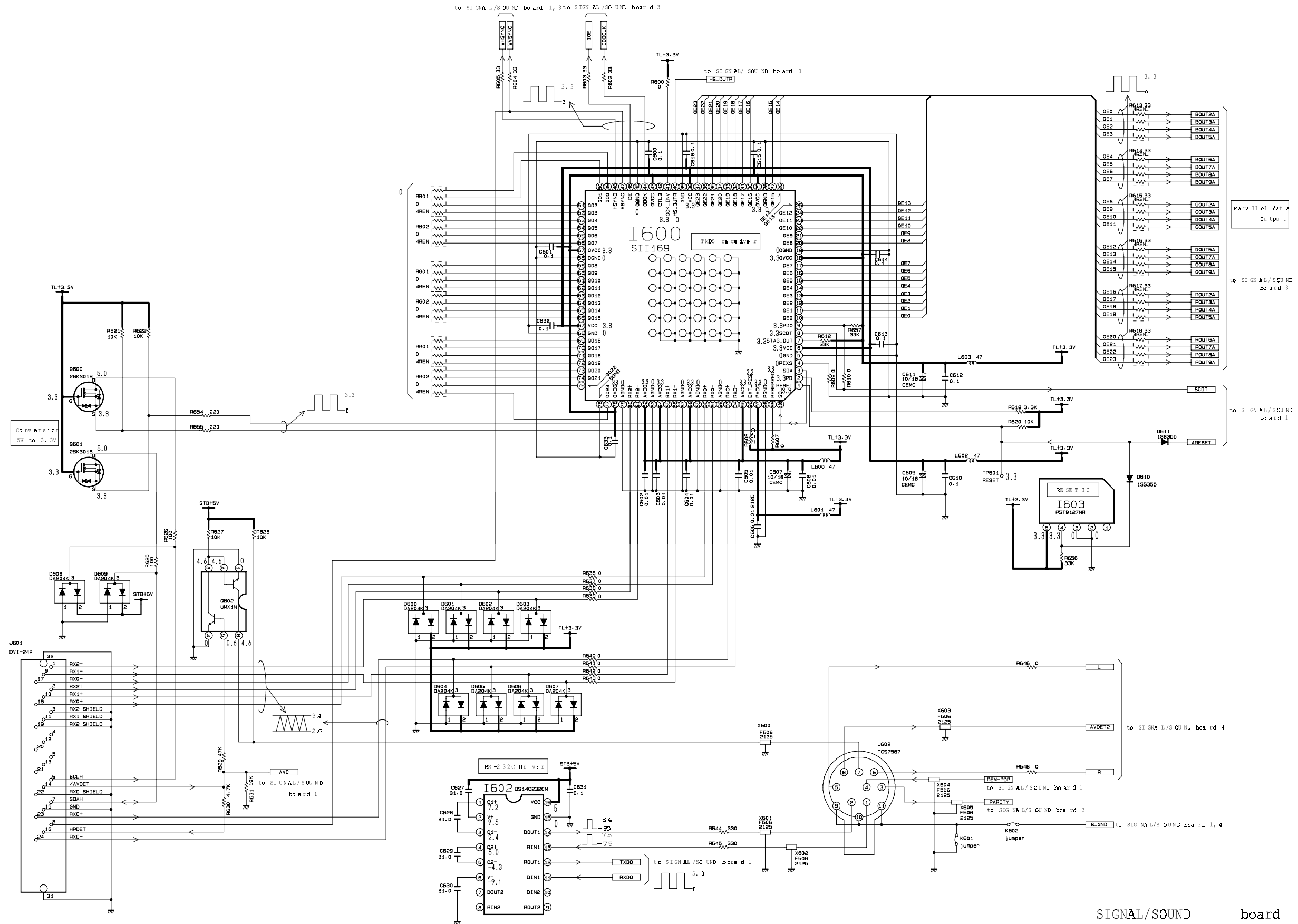


SM003

AV Control Circuit

HITACHI



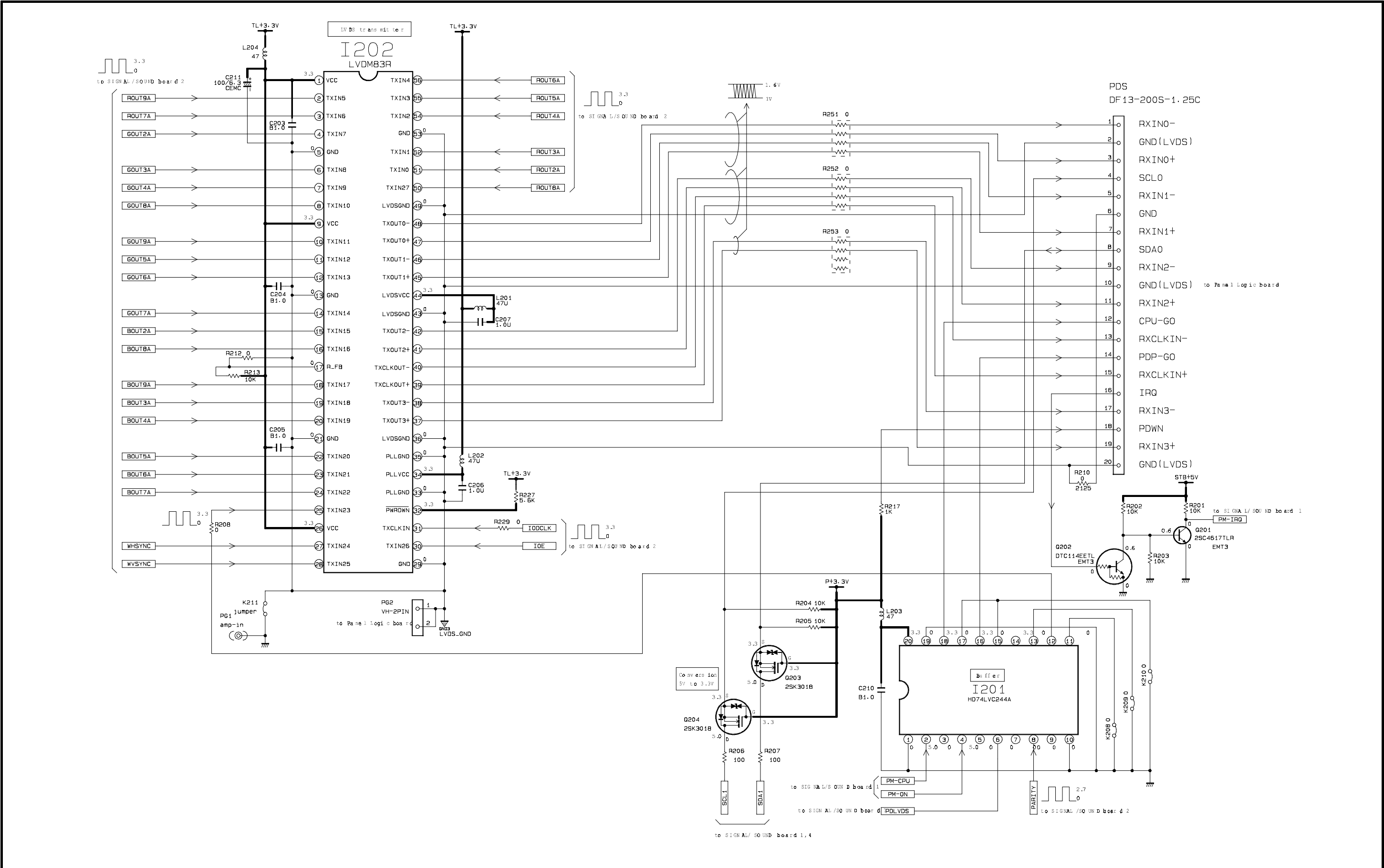


SM003

Signal/Sound Board Sheet 2

HITACHI

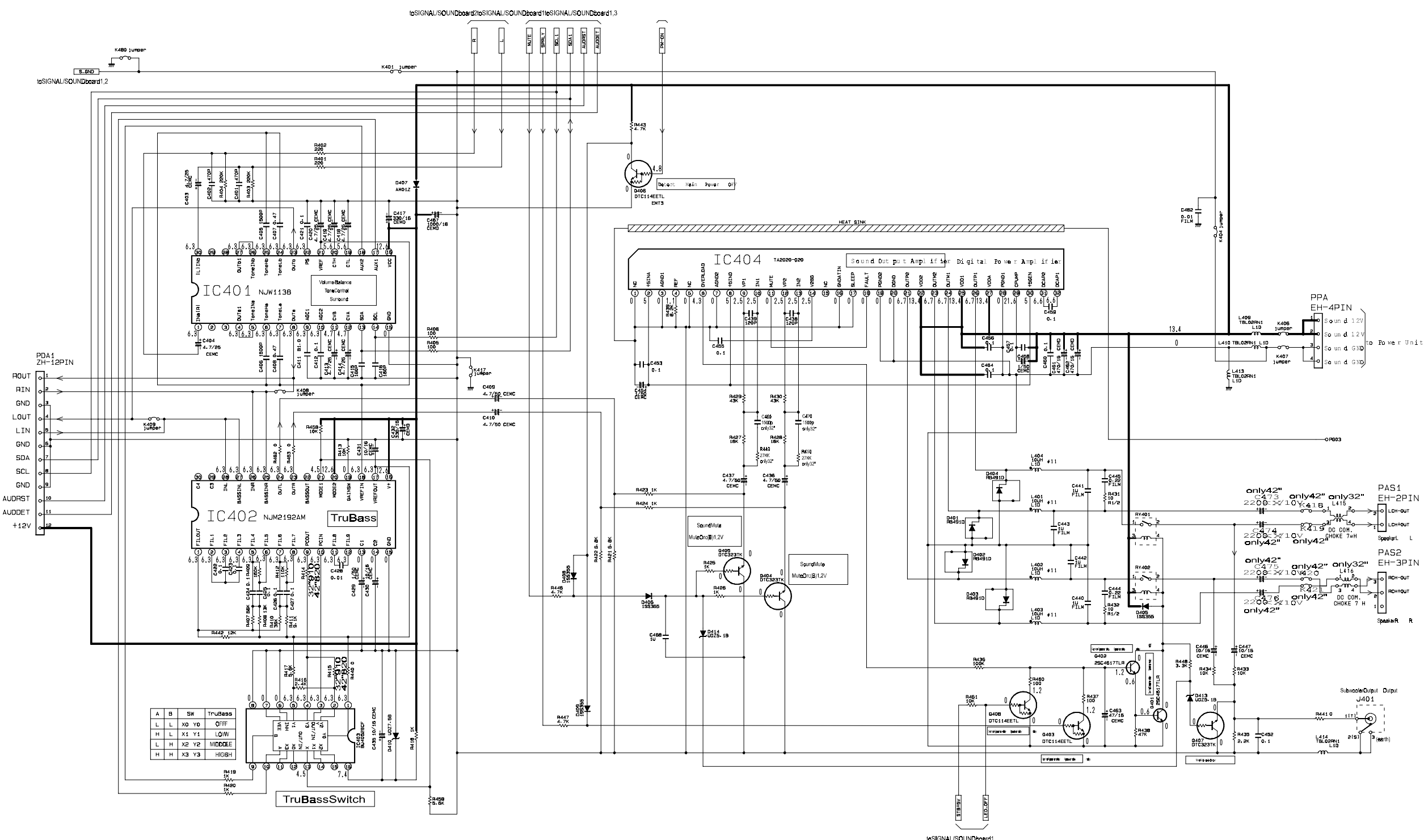




SM003

Signal/Sound Board Sheet 3

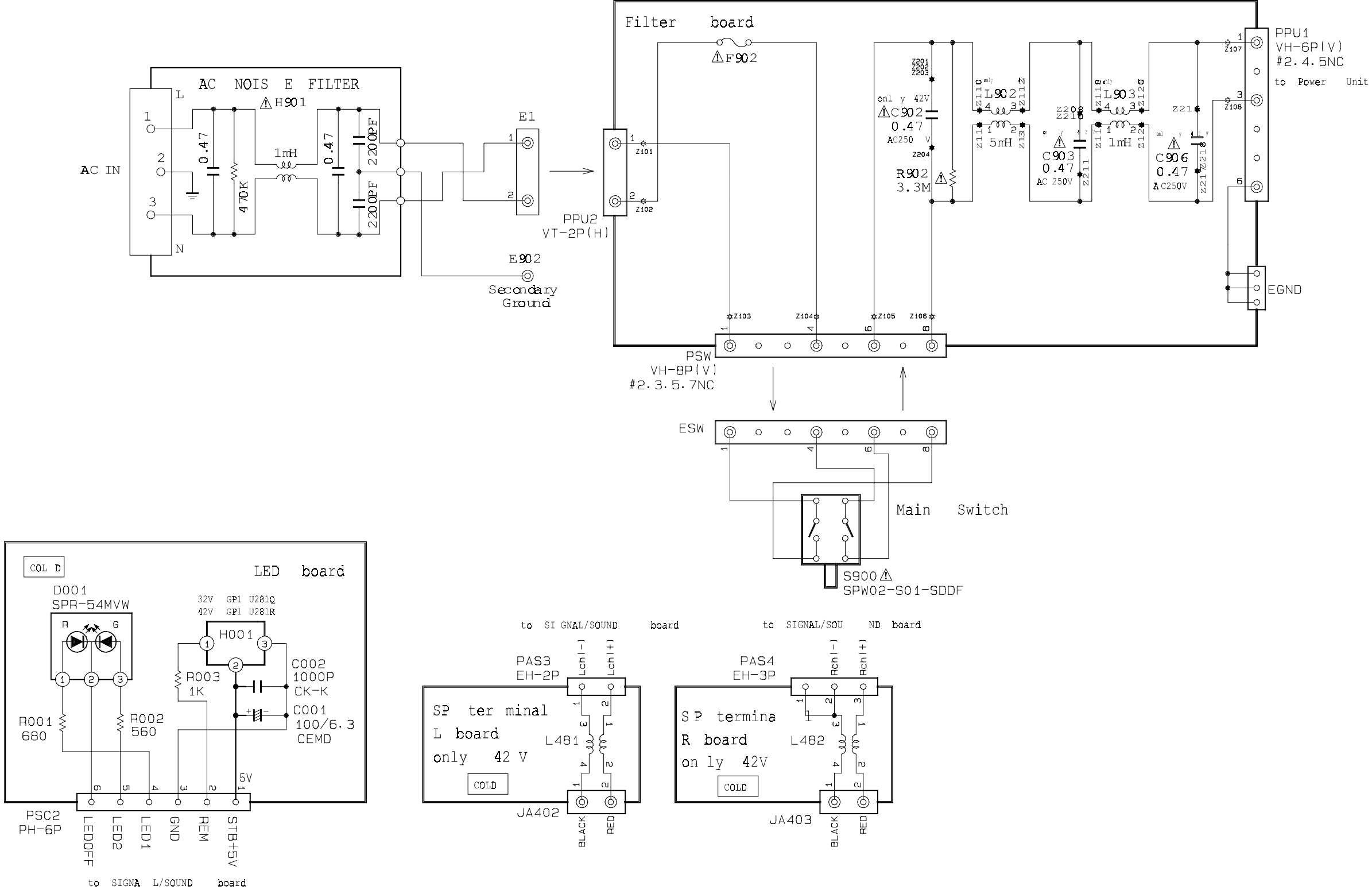
HITACHI



SM003

# Signal/Sound Board Sheet 4

# HITACHI



SM003

Monitor Switch, LED, Filter, SP Terminals

HITACHI



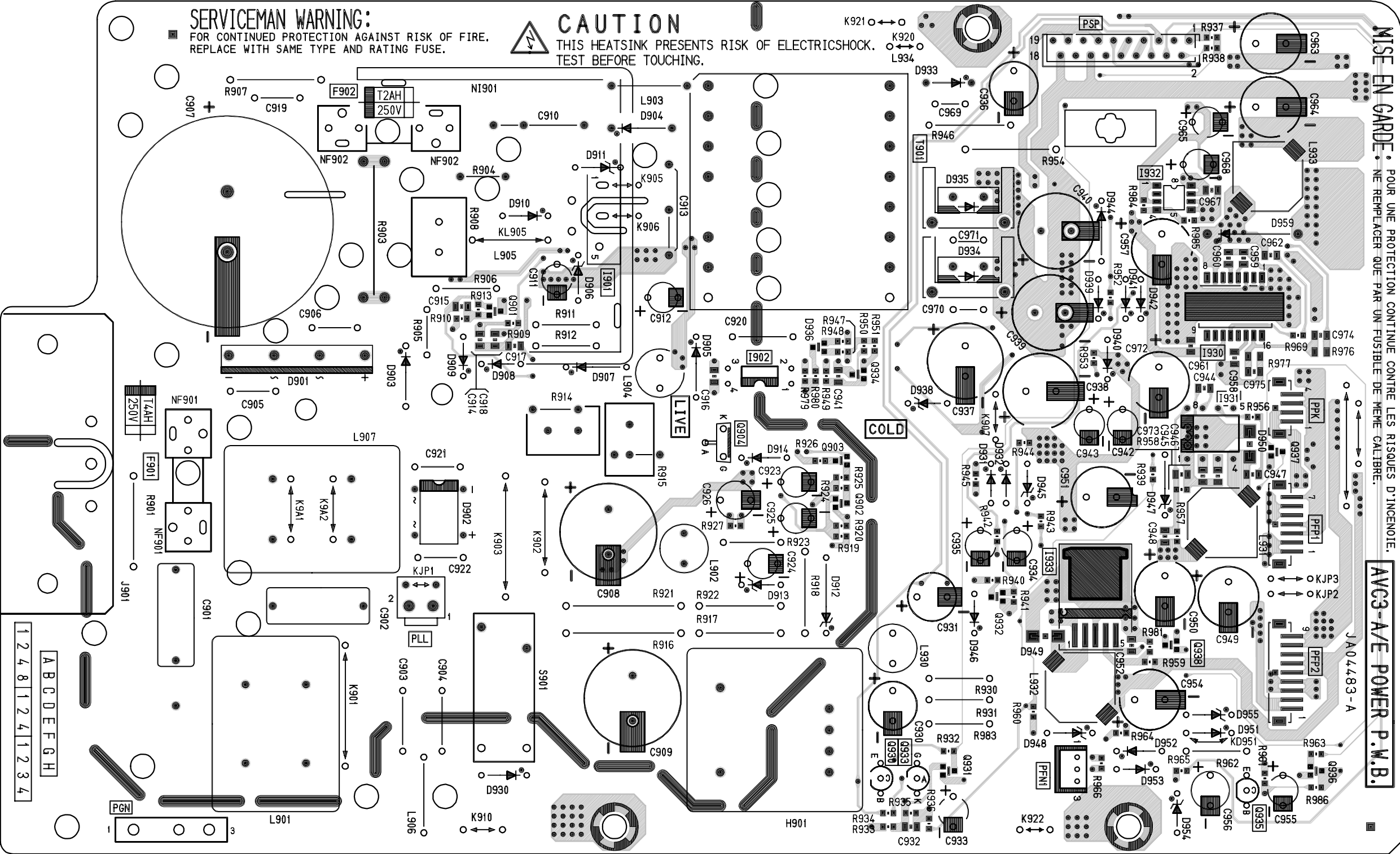
## AV Board - Side A

# HITACHI



# HITACHI

AV Power Side A

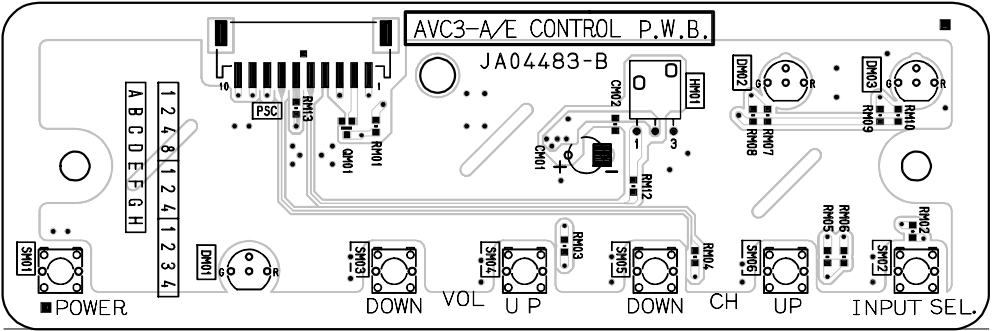
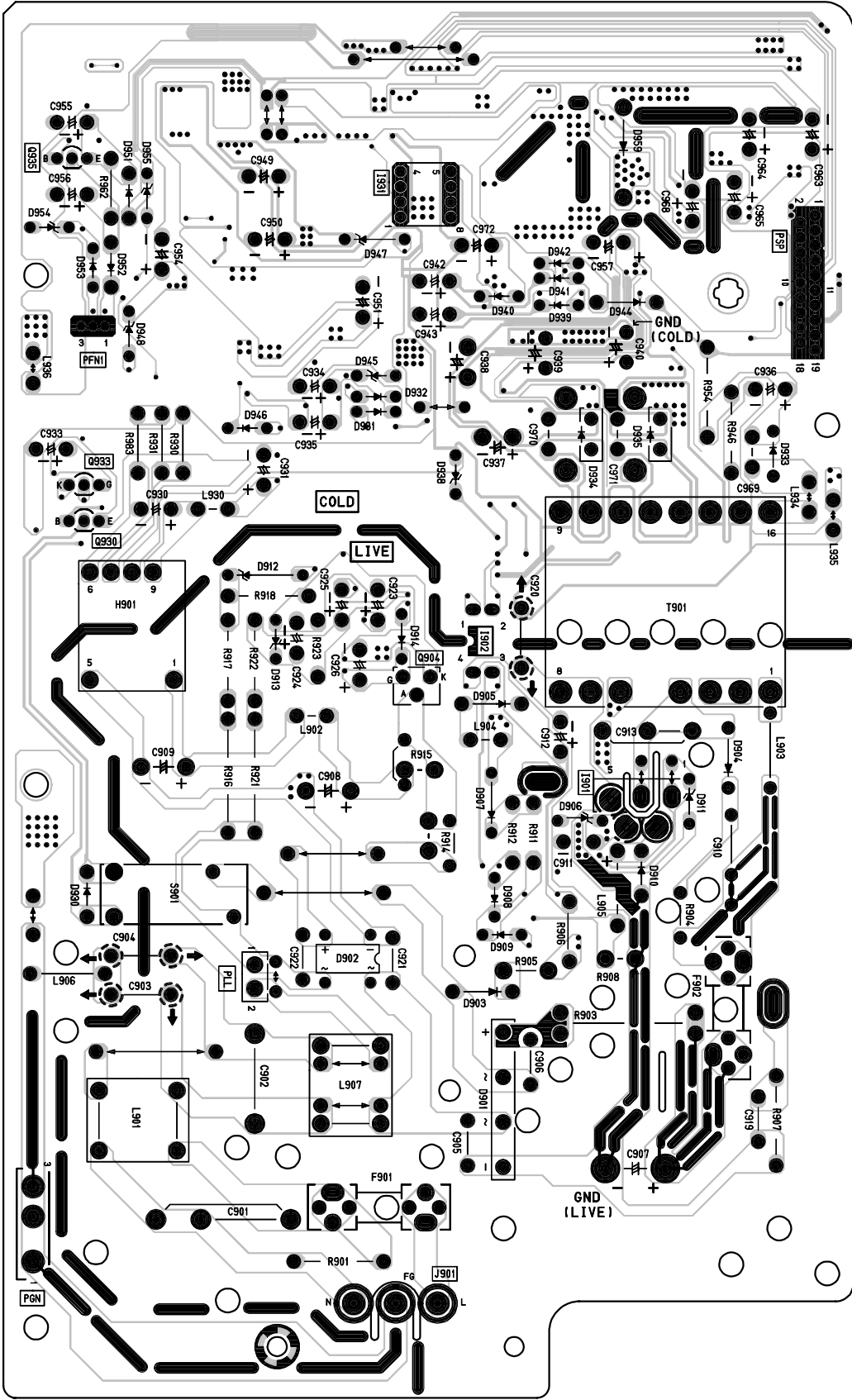


SM003

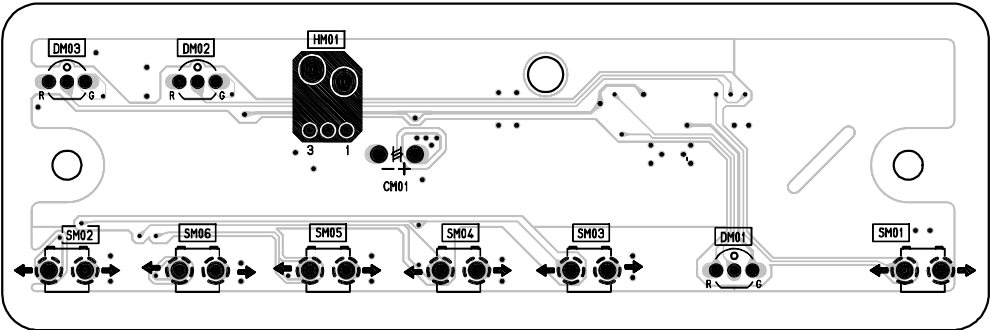
Power Board - Side A

HITACHI

AV Power Side B



CONTROL BOARD - SIDE A



CONTROL BOARD - SIDE B

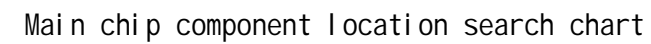
SM003

Power Board - Side B

HITACHI



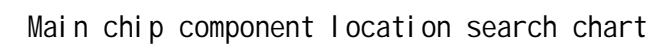
SIGNAL/SOUND board is 4 layered. The inner layer is not recorded.



Cir. No.	Position	Cir. No.	Position	Cir. No.	Position	Cir. No.	Position	Cir. No.	Position	Cir. No.	Position	Cir. No.	Position
D003	C4	D602	F1	I003	C4	L600	D2	Q201	D4	Q001	E5	X604	G1
D401	K4	D603	F1	I201	D5	L601	E2	Q202	D4	Q004	A2	X605	F1
D402	K3	D604	E1	I202	B5	L602	E2	Q203	C6	TP001	D3	XS01	A2
D403	K3	D605	E1	I600	E2	L603	E3	Q204	C6	TP002	C4	XS02	B1
D404	K4	D606	F1	I601	G2	L604	G3	Q401	I4	TP601	D2	XS03	B1
D405	J4	D607	E1	I602	G3	LP02	F4	Q402	J4	X001	G5		
D406	J2	D610	D2	I603	D1	LP04	E5	Q403	J3	X002	D3		
D408	J2	D611	D2	IC401	H2	PDA1	H6	Q404	K1	X201	B5		
D409	I3	DP01	F5	IC402	J2	PDS	A5	Q405	K1	X202	B5		
D410	I1	DS01	A2	IC403	J1	PSC2	G6	Q406	I3	X203	B5		
D413	H4	DS02	A2	IP02	F5	Q001	C4	Q407	H4	X204	C4		
D414	K2	DS03	A3	L201	B5	Q002	C2	Q408	J3	X600	G1		
D415	I3	DS04	B4	L202	B5	Q003	C2	Q600	F2	X601	G1		
D600	E1	I001	C3	L203	D5	Q005	G5	Q601	F2	X602	G1		
D601	E1	I002	B3	L204	C5	Q006	G5	Q602	G2	X603	G1		

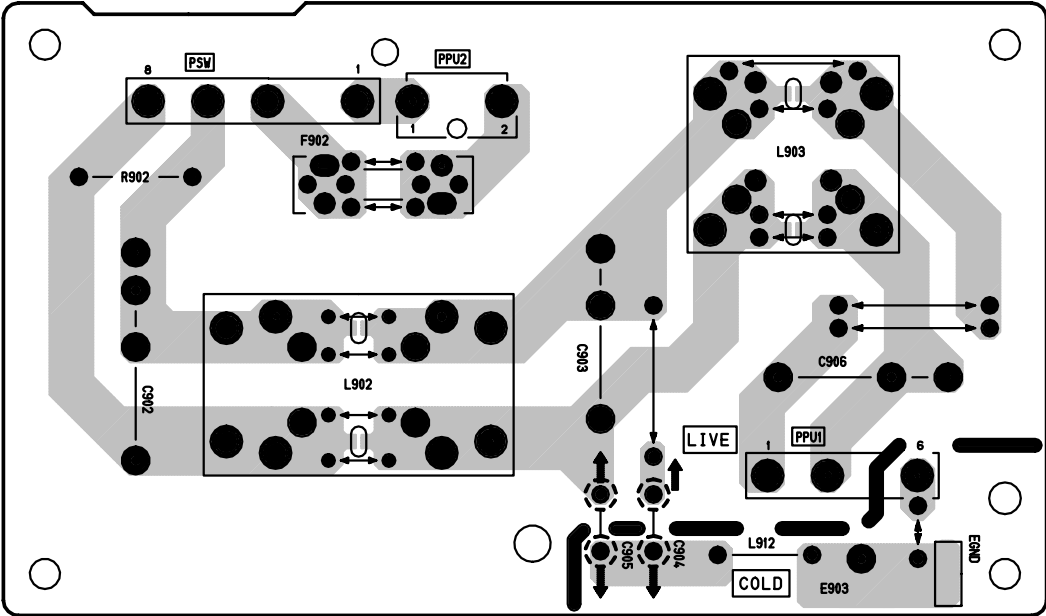


SIGNAL/SOUND board is 4 layered. The inner layer is not recorded.

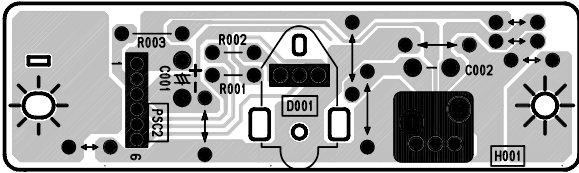


### Main chip component location search chart

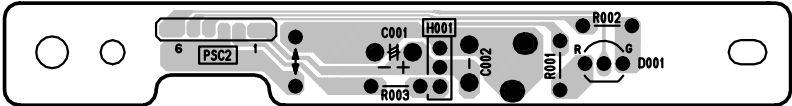
FILTER board



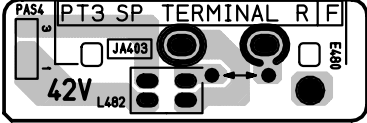
LED board for 32V



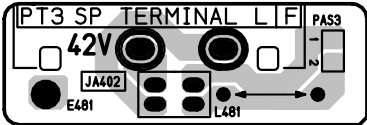
LED board for 42V



SPEAKER TERMINAL (R) bord (only 42V)



SPEAKER TERMINAL (L) bord (only 42V)



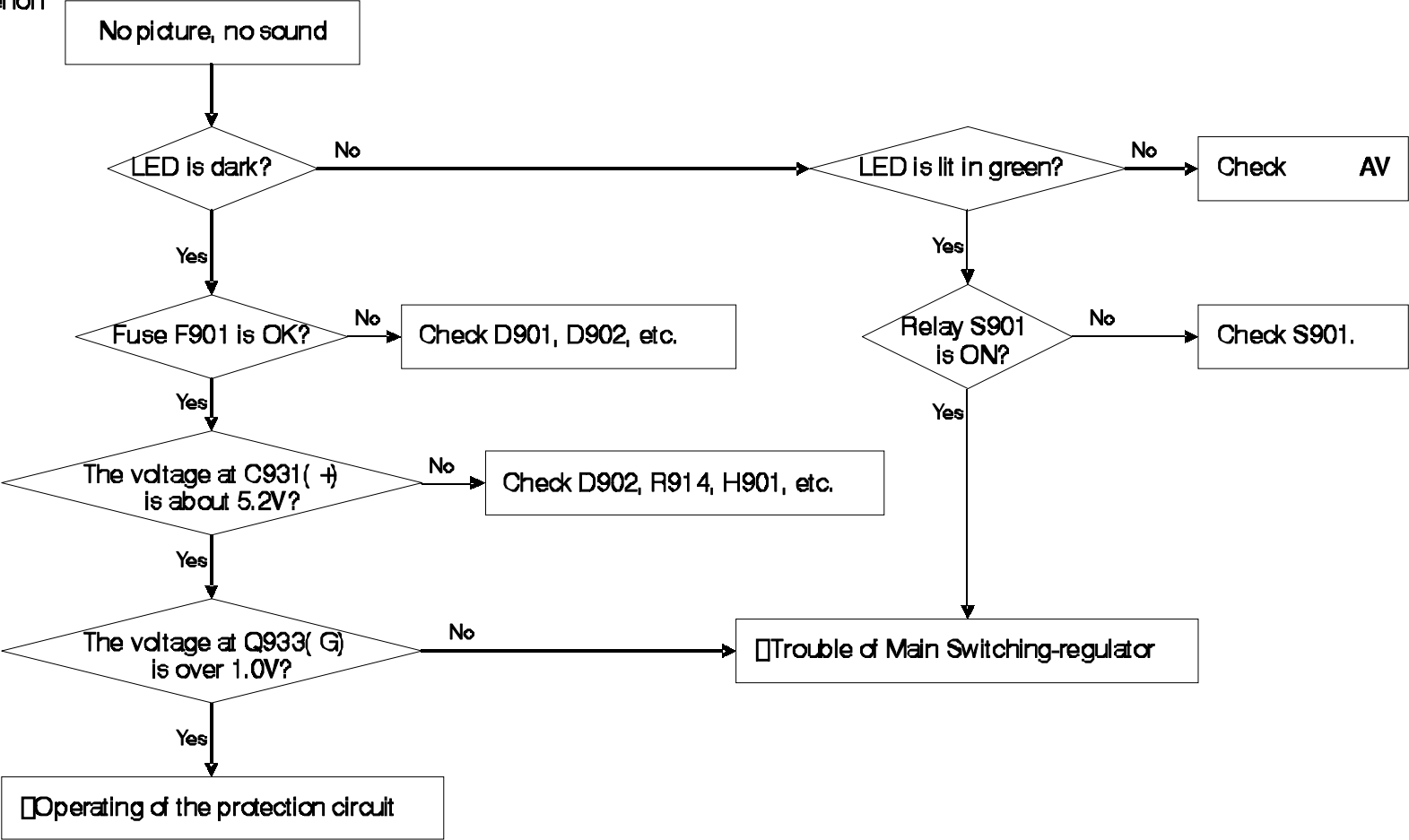
# Troubleshooting Flow Charts

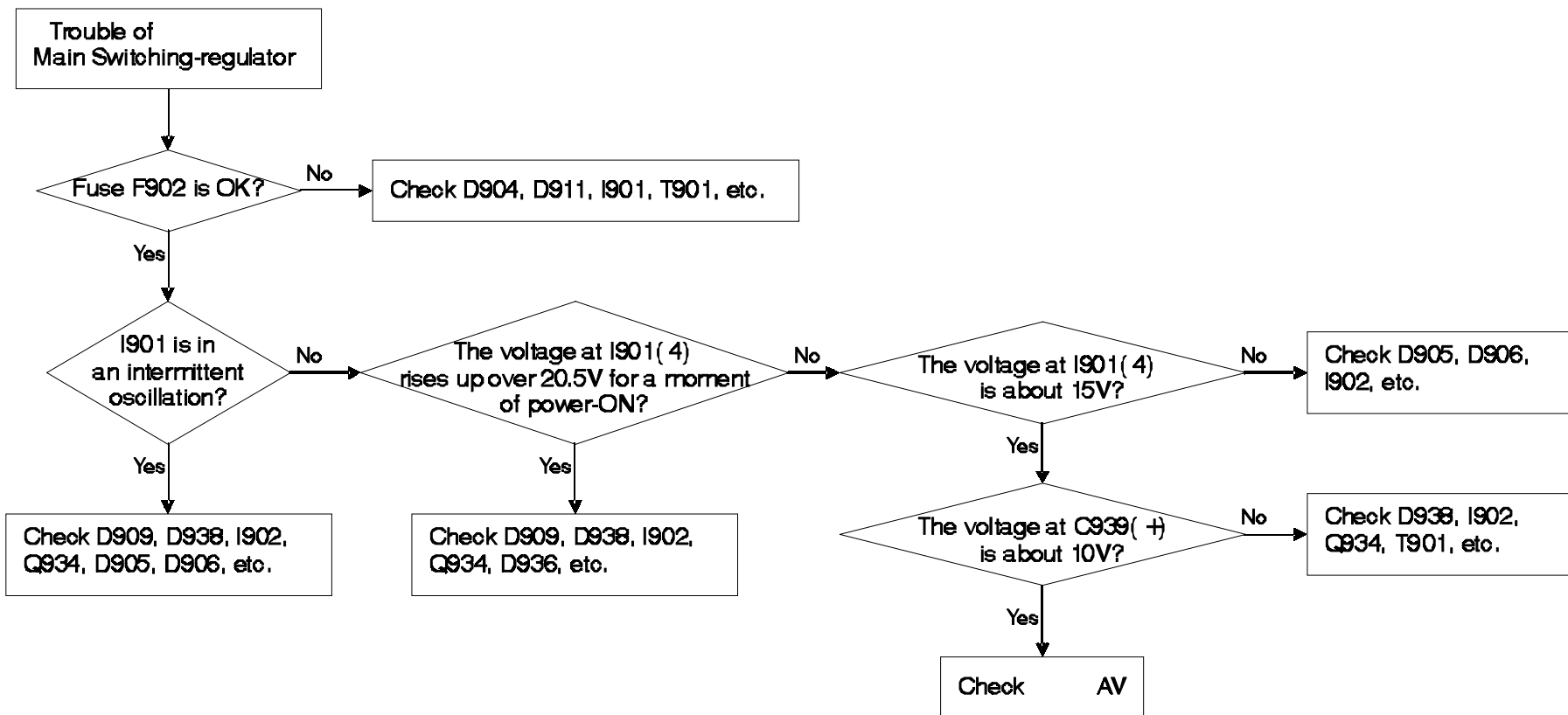
## AV Power - 1

**Caution!**  
It should be always confirmed that C907(CE220uF/450V) is discharged when touching POWER P.W.B. with fingers or soldering iron after power-off to prevent the electric shock and second damage.

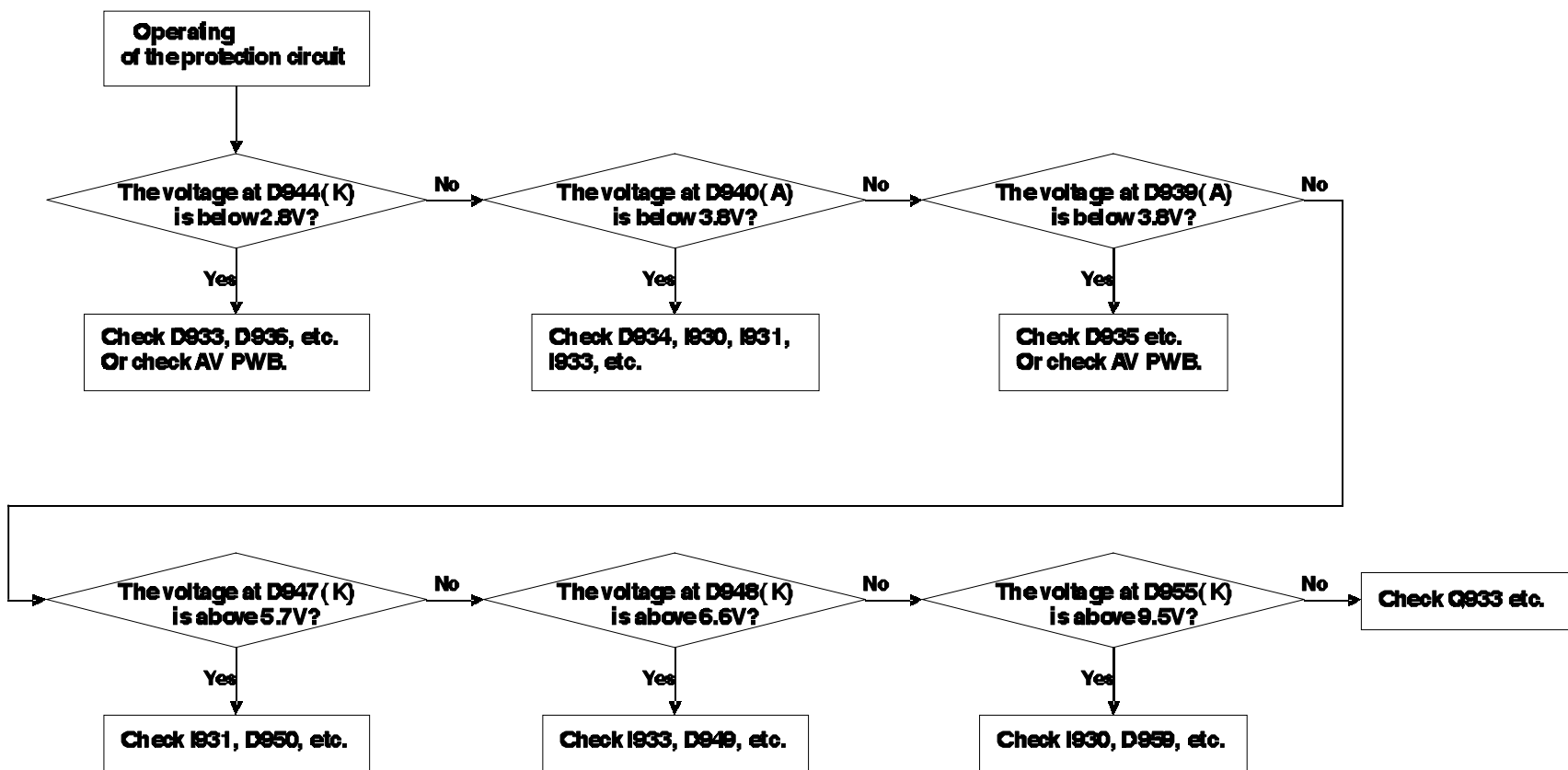
**Trouble Shooting**  
**AVC Power Supply Circuit**

Phenomenon



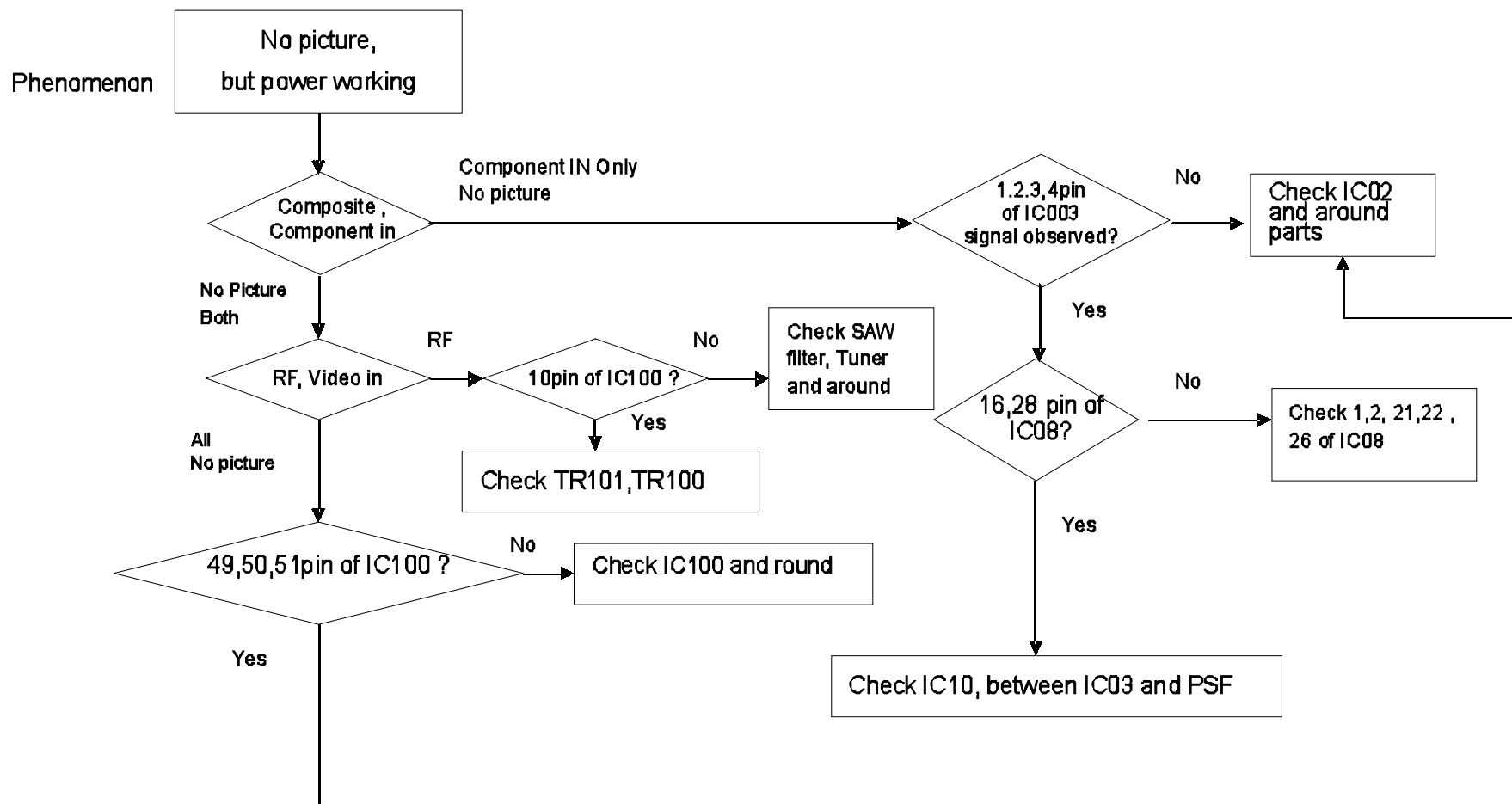


## AV Power - 3



Trouble Shooting  
AVC AV Signal Circuit

AV Circuit

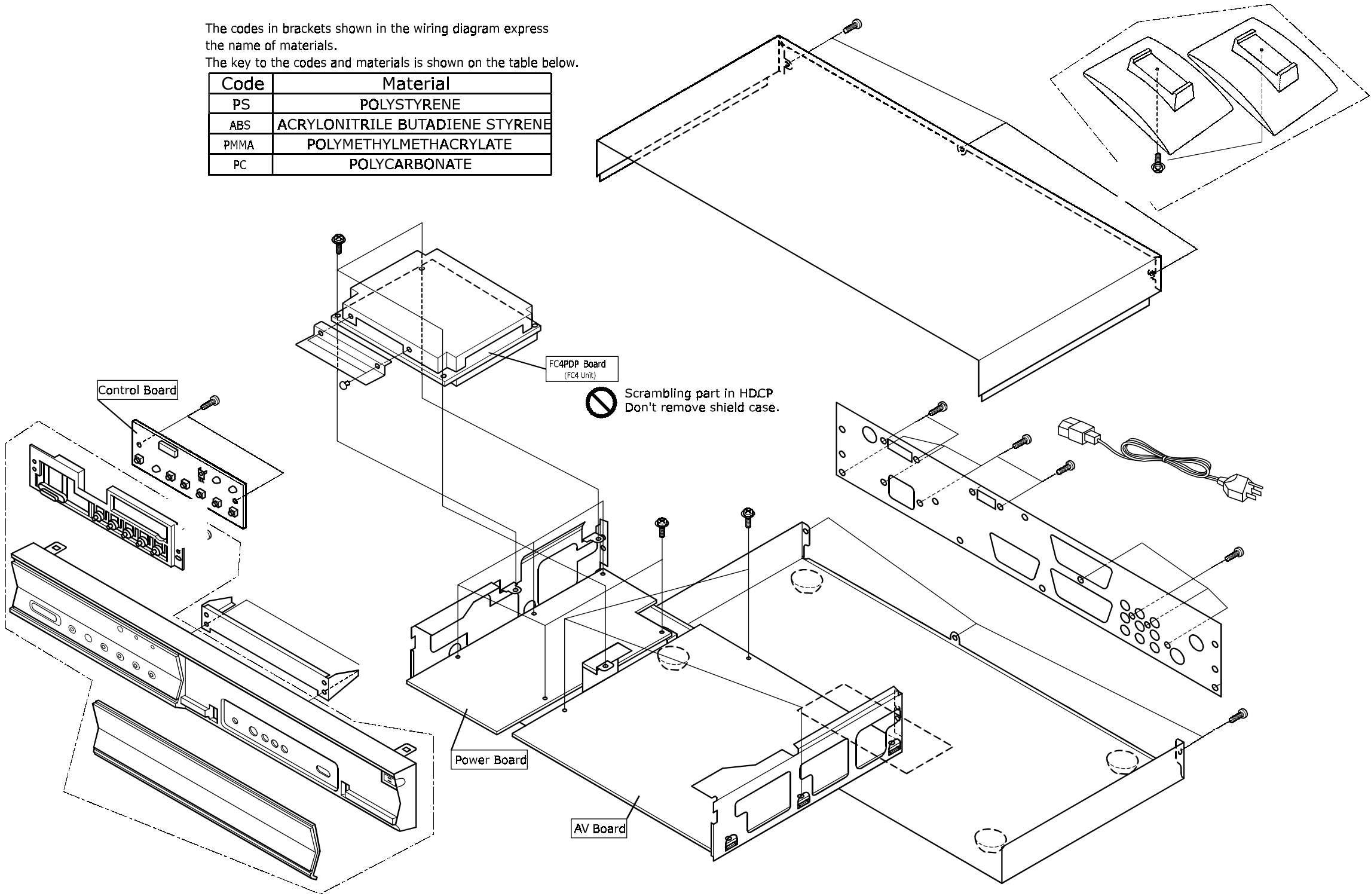


# Assembly Drawings

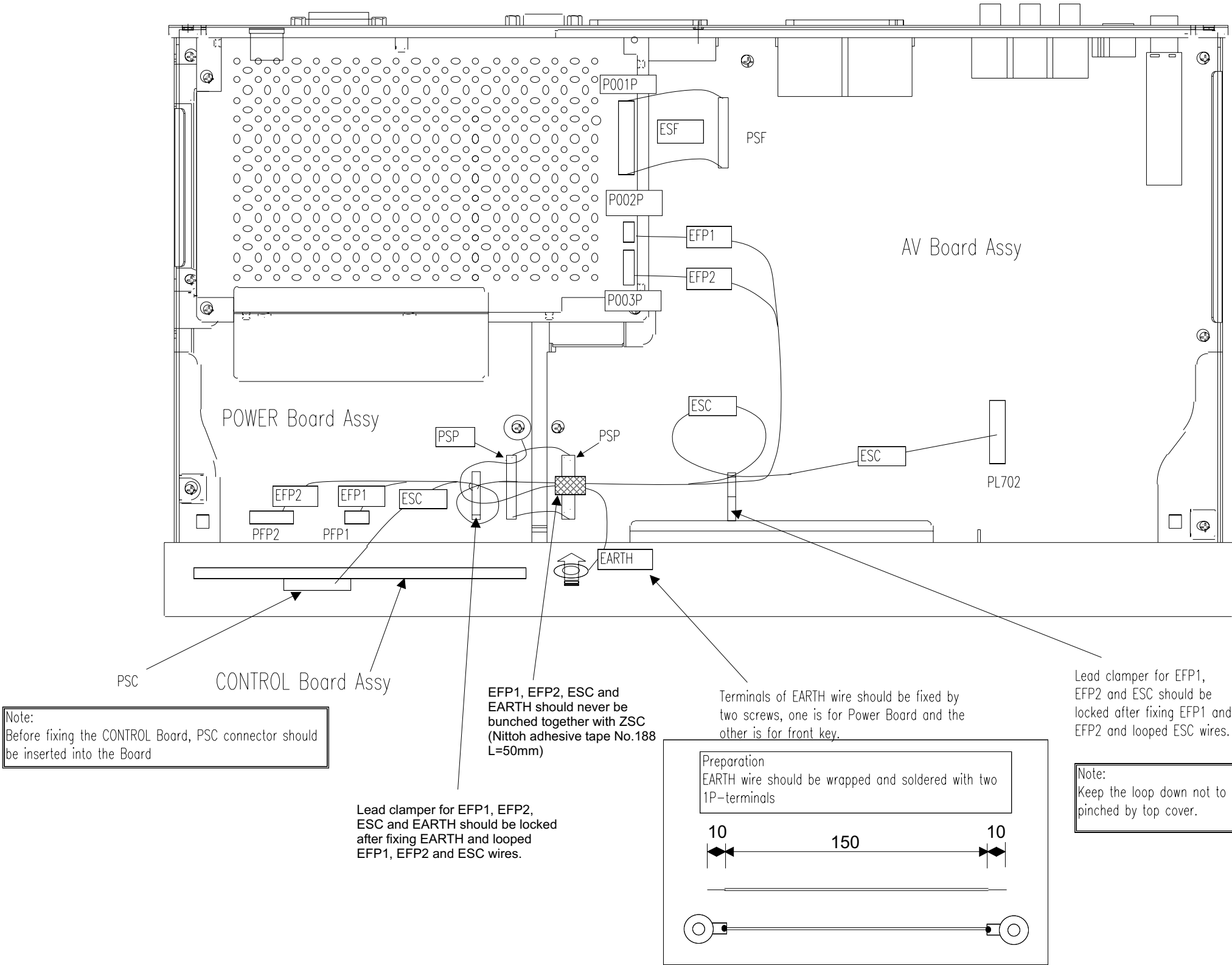
Audio / Video

The codes in brackets shown in the wiring diagram express the name of materials.  
The key to the codes and materials is shown on the table below.

Code	Material
PS	POLYSTYRENE
ABS	ACRYLONITRILE BUTADIENE STYRENE
PMMA	POLYMETHYLMETHACRYLATE
PC	POLYCARBONATE



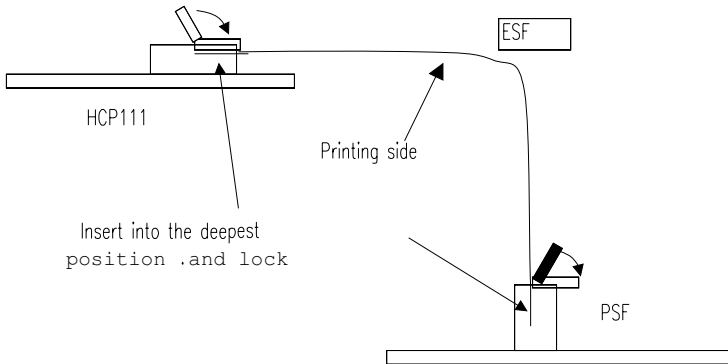
Wiring for Audio / Video Components



Specification

1. This Drawing shows the wire dressing and connectors' connection of AVC3-E Final Assy.
2. Connectors with wire should be inserted into Plug Pin Posts as shown on the table below
3. Into Plug Pin Post with Lock function, connector housing should be inserted deeply until it can be locked.
4. Into Plug Pin Post without Lock function, connector housing should be inserted most deeply.
5. Flexible Flat Cable ESF should be fixed as shown on the drawing below

Connector with wire		Plug Pin 1		Plug Pin 2	
Name	Assy List	Board	Name	Board	Name
ESC	FINAL ASSY	Control Board	PSC	AV Board	PL702
EFP1	FINAL ASSY	Power Board	PFP1	HCP111	P002P
EFP2	FINAL ASSY	Power Board	PFP2	HCP111	P003P
ESF	FINAL ASSY	AV Board	PSF	HCP111	P001
PSP	Power Board Assy	AV Board	PSP	-	-

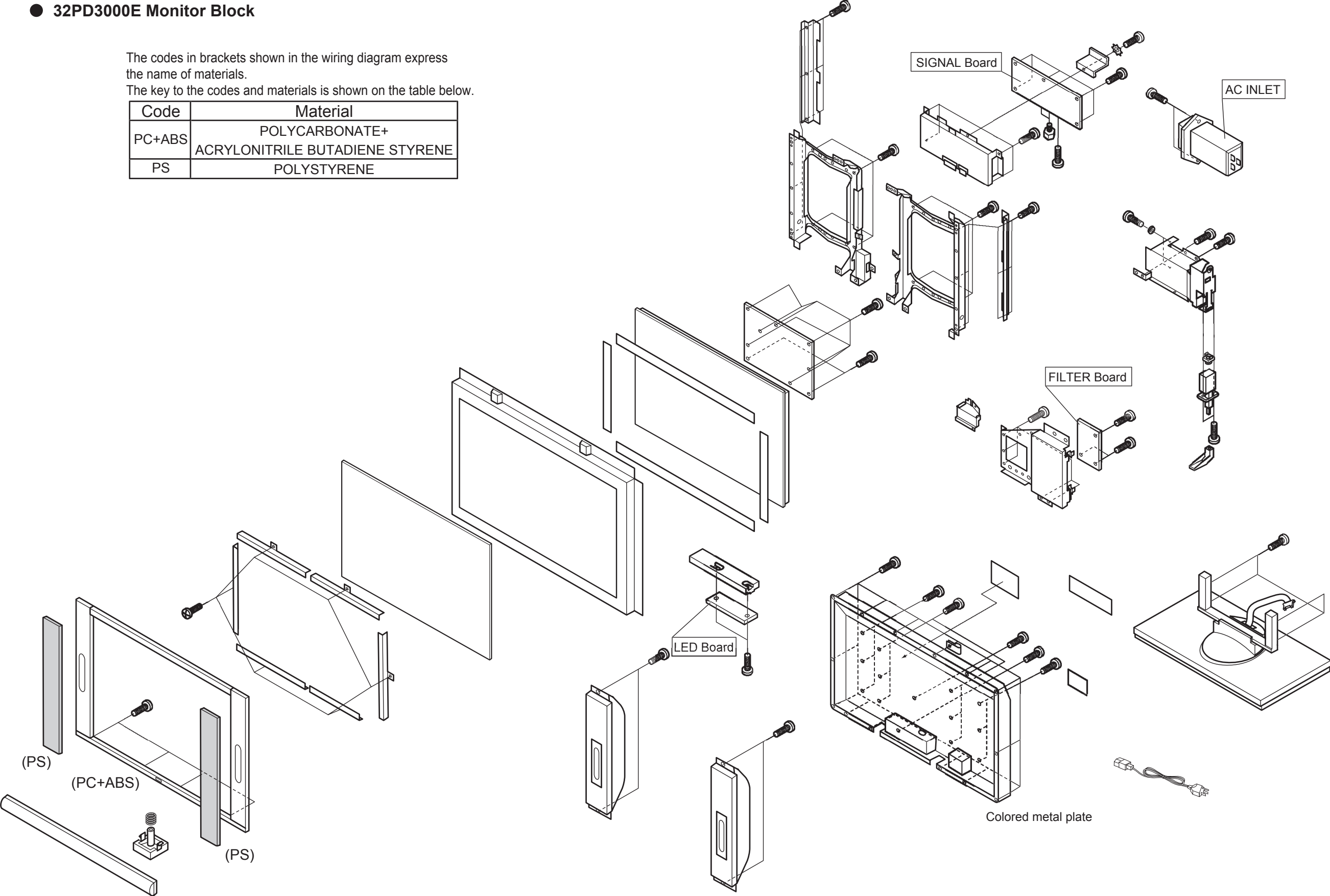




● 32PD3000E Monitor Block

The codes in brackets shown in the wiring diagram express the name of materials.  
The key to the codes and materials is shown on the table below.

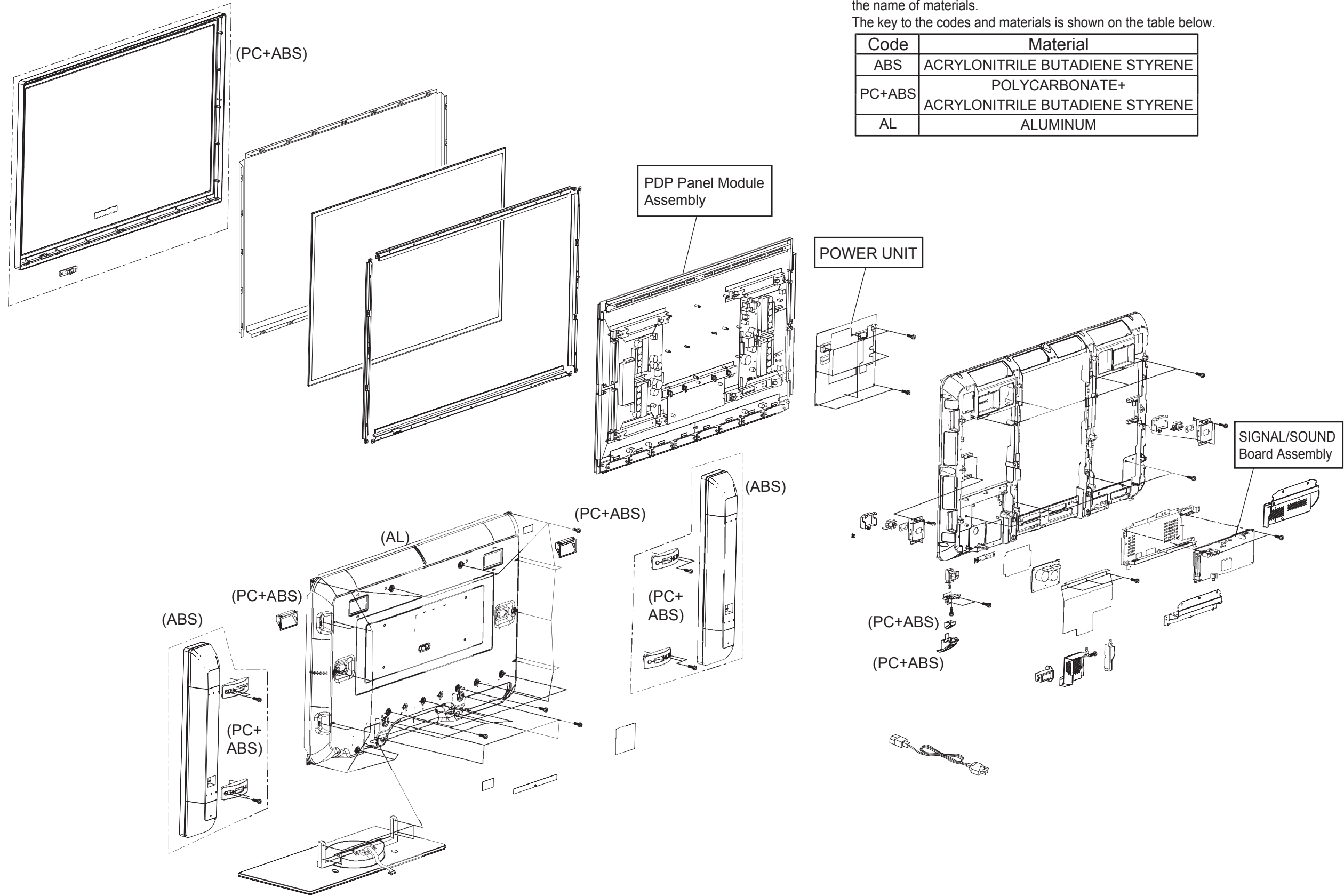
Code	Material
PC+ABS	POLYCARBONATE+ ACRYLONITRILE BUTADIENE STYRENE
PS	POLYSTYRENE



32PD3000E  
42PD3000E

32PD3000E  
42PD3000E

## ● 42PD3000E Monitor Block



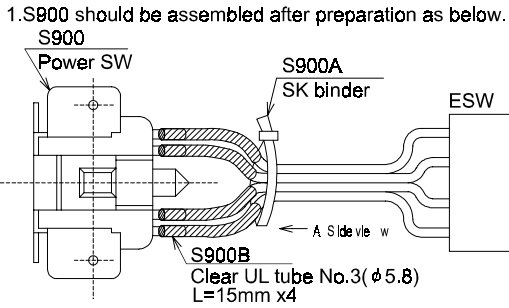
The codes in brackets shown in the wiring diagram express the name of materials.

The key to the codes and materials is shown on the table below.

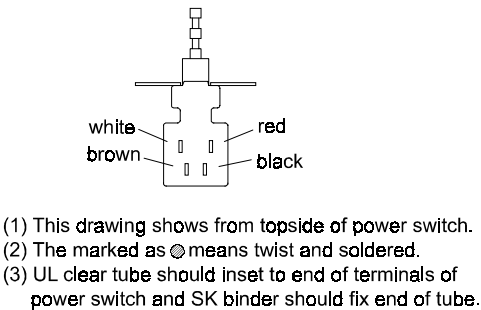
Code	Material
ABS	ACRYLONITRILE BUTADIENE STYRENE
PC+ABS	POLYCARBONATE+ ACRYLONITRILE BUTADIENE STYRENE
AL	ALUMINUM

32 inch Monitor Wiring A

Preparative work



A Side view



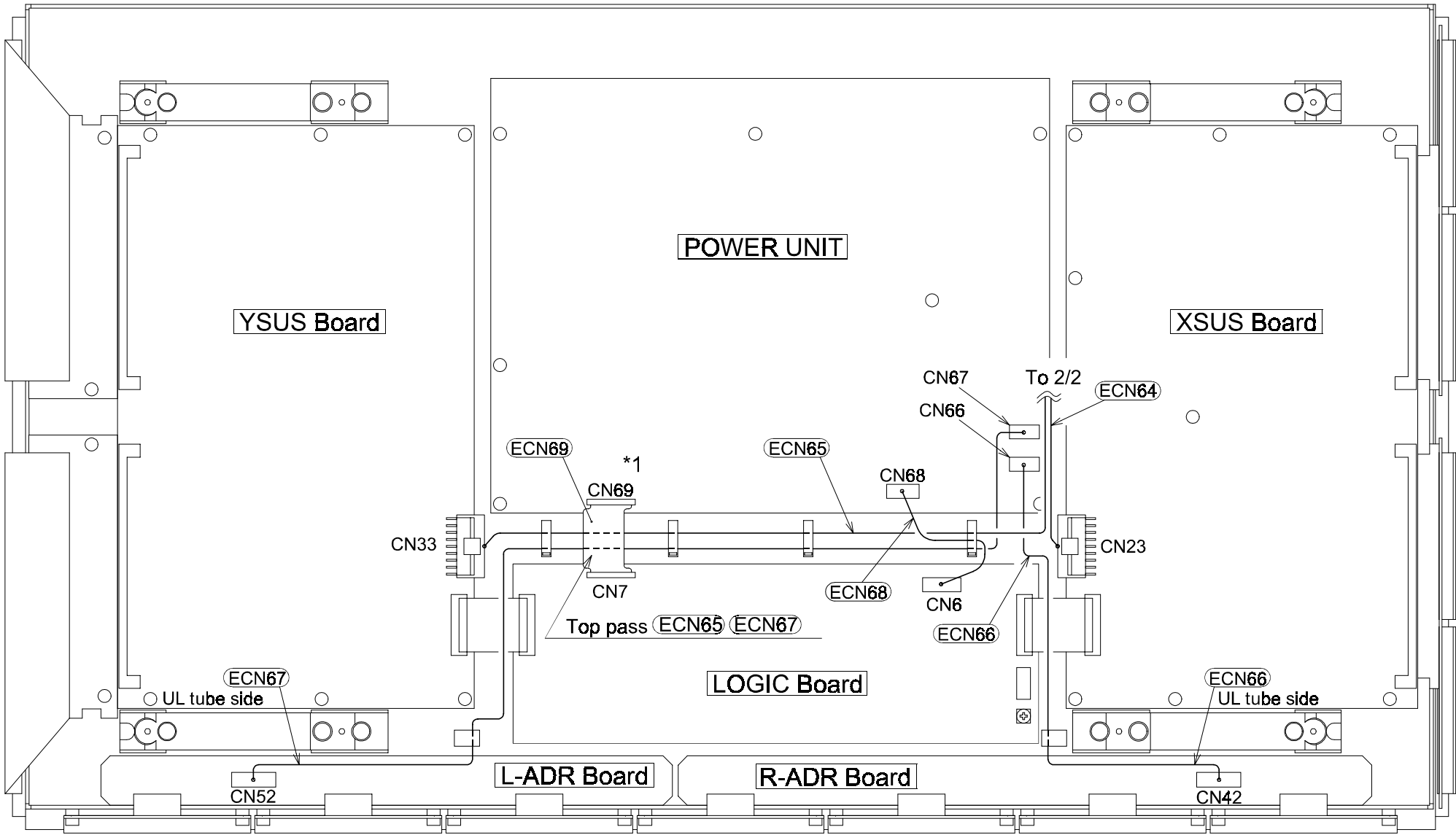
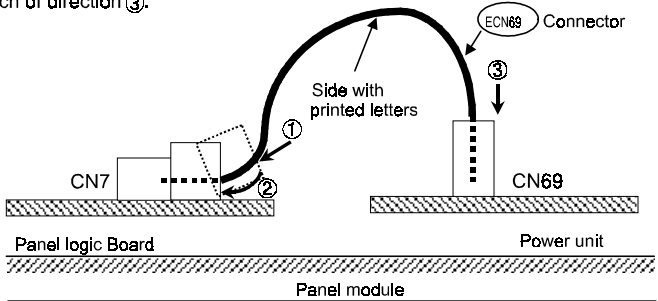
Specification of part \*1

Printing part of ECN69 connector should be set to module side of panel.

(1) Release the lock of CN7 (position of dot line as figures), then ECN69 connector should be inset to CN7 until touch of direction ① as figures.

(2) Keep condition (1), lock of CN7 shift to direction 2 and fix.

(3) The other side; which is CN69 side of ECN69 should be completely insert until touch of direction ③.

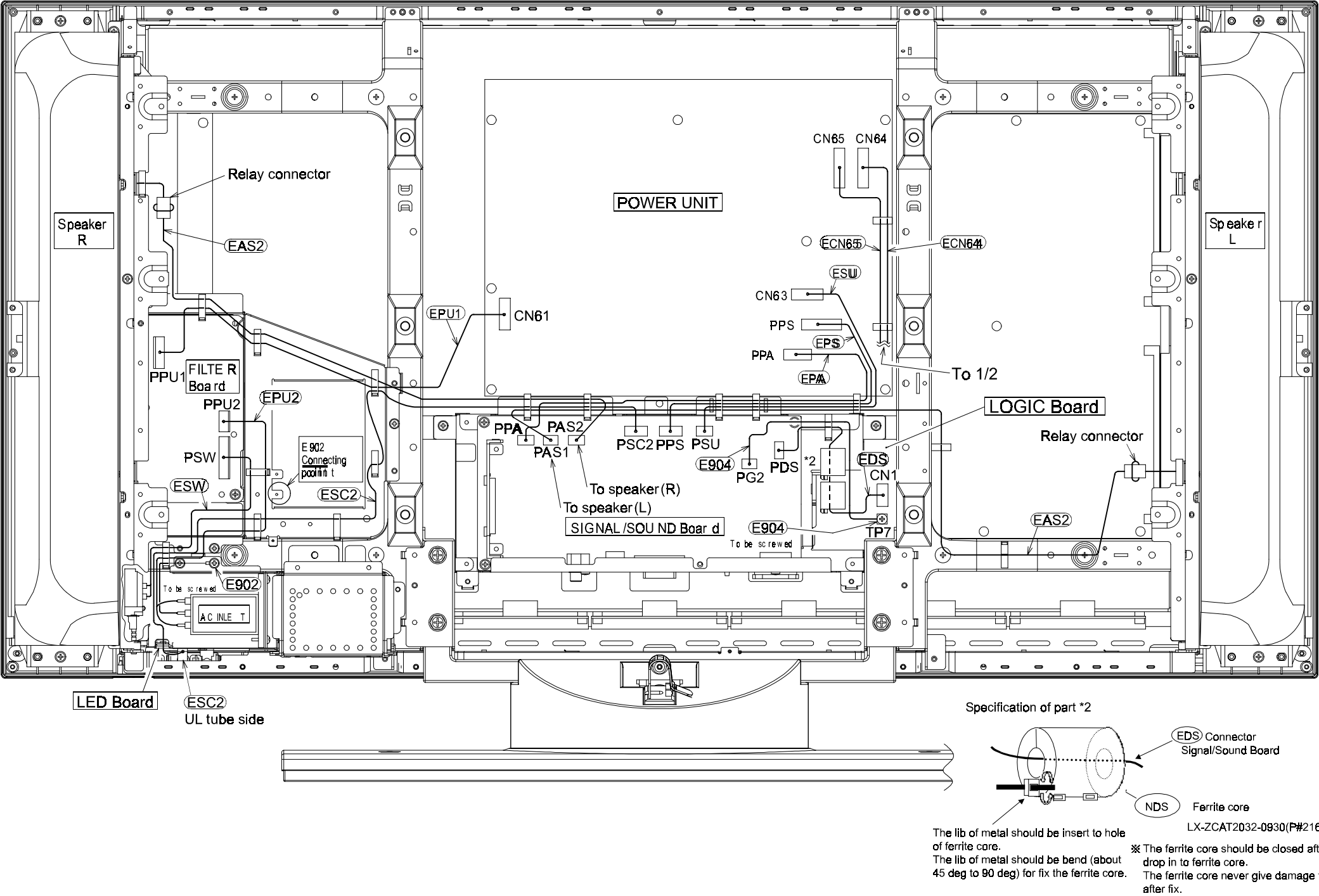


SM003

32 PD Monitor Wiring Diagram Part 1

HITACHI

32 inch Monitor Wiring B

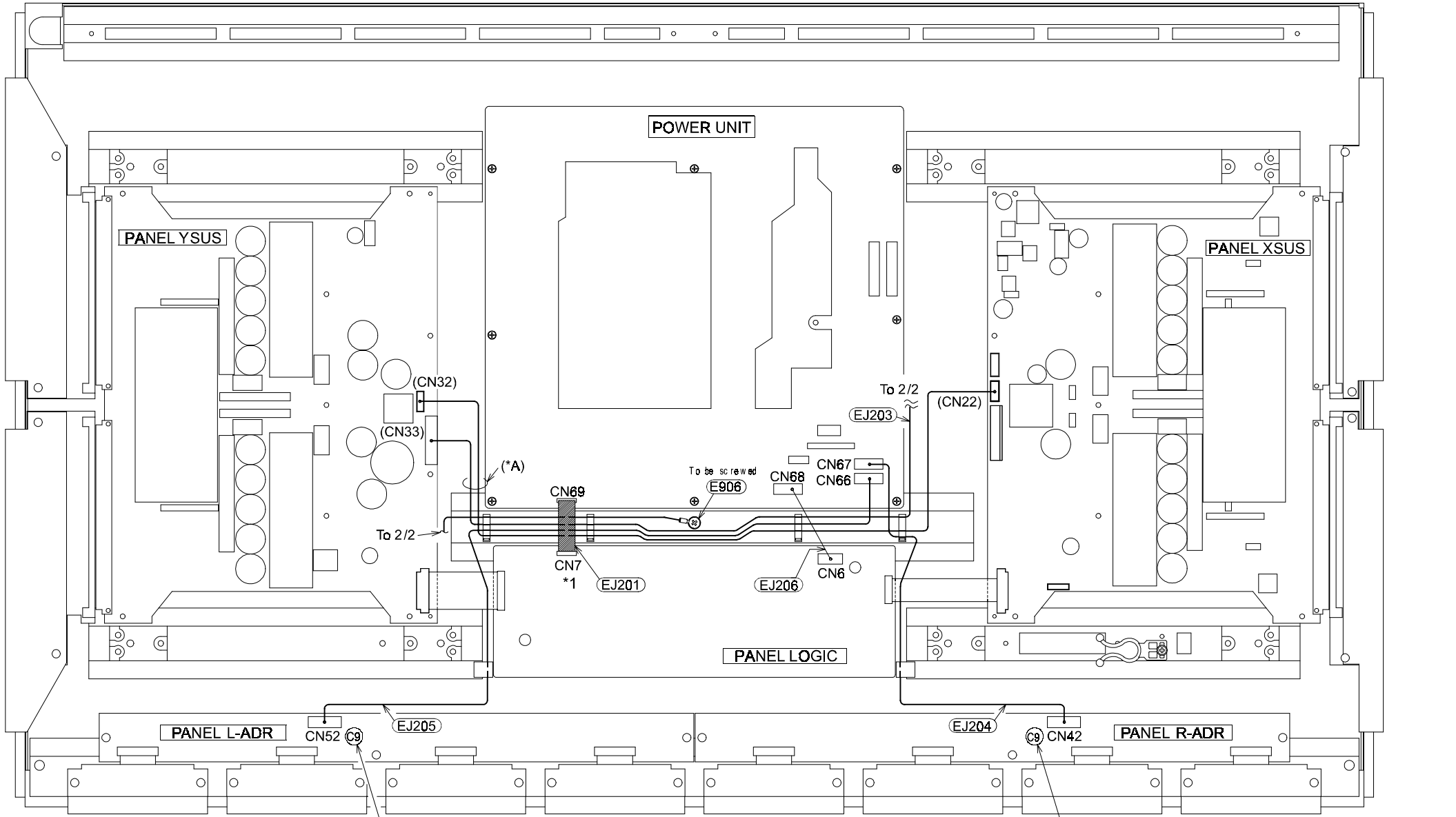


SM003

32 PD Monitor Wiring Diagram Part 2

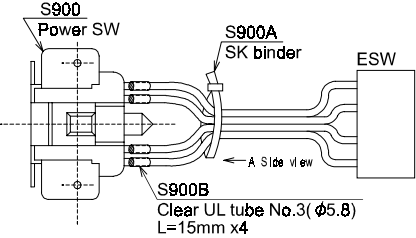
HITACHI

42 inch Monitor Wiring A



Preparative work

1.S900 should be assembled after preparation as below.



A Side view

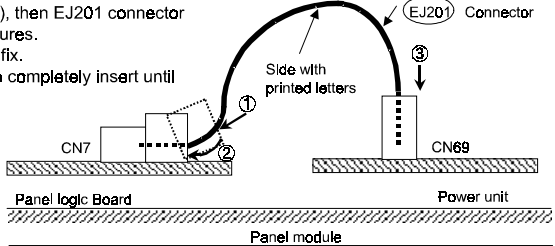
white  
brown  
red  
black

- (1) This drawing shows from topside of power switch.
- (2) The marked as ● means twist and soldered.
- (3) UL clear tube should inset to end of terminals of power switch and SK binder should fix end of tube.

Specification of part \*1

Printing part of EJ201 connector should be set to module side of panel.

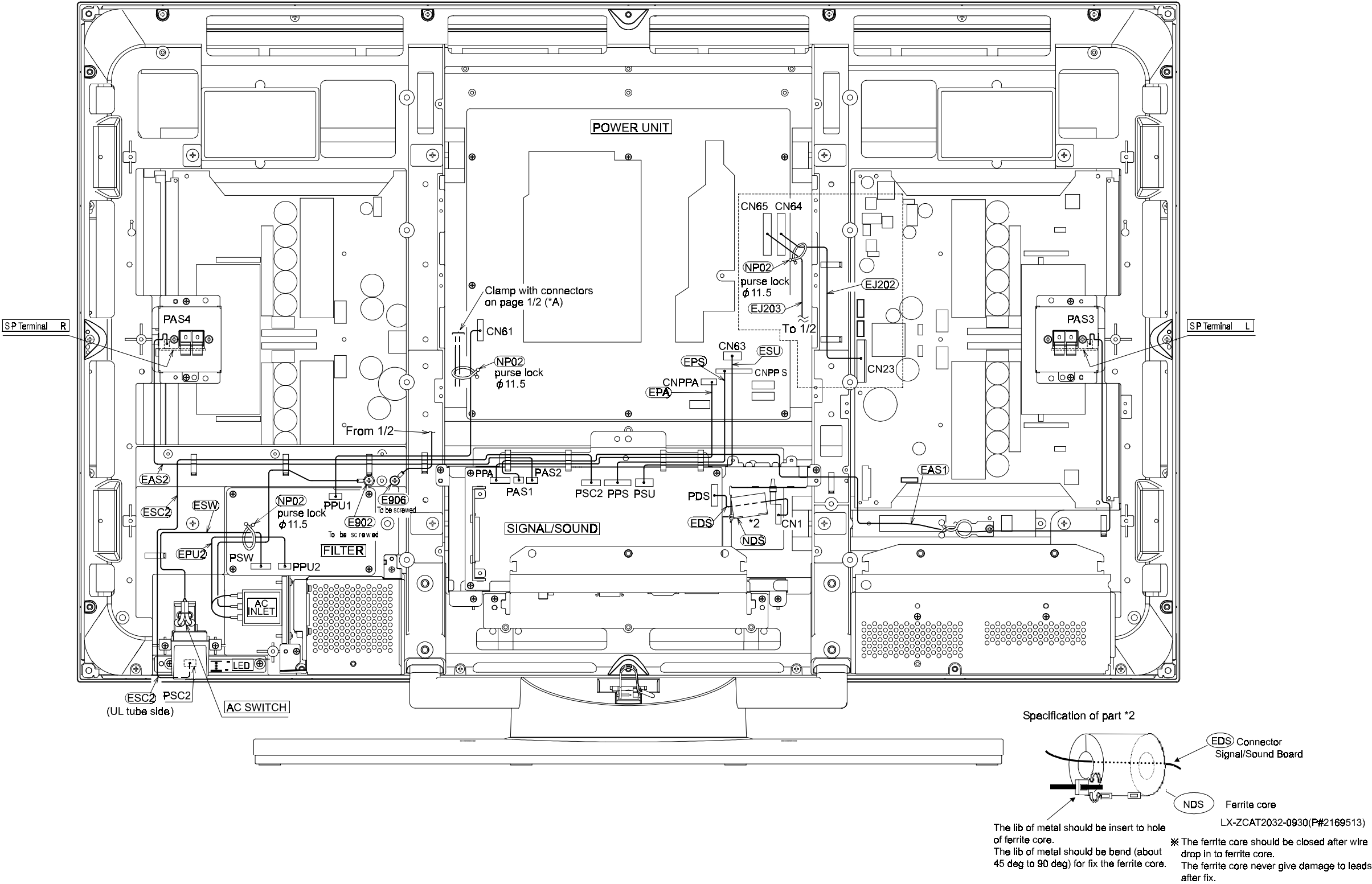
- (1) Release the lock of CN7 (posltion of dot line as figures), then EJ201 connector should be inset to CN7 until touch of direction ① as figures.
- (2) Keep condition (1), lock of CN7 shift to direction 2 and fix.
- (3) The other side; which is CN69 side of EJ201 should be completely insert until touch of direction ③.



SM003

42PD3000 Wiring Diagram - 1

HITACHI



SM003

42PD3000 Wiring Diagram - 2

HITACHI

# 24 way Digital Interface Cable Connection

AVC(FC4) P301P DV174320-4004			<u>PDP</u>
1	TX2-	➔	TX2-
2	TX2+	➔	TX2+
3	SHIELD	---	SHIELD
4	N.C.	---	N.C.
5	N.C.	---	N.C.
6	SCLH	➔	SCLH
7	SDAH	➔	SDAH
8	N.C.	---	N.C.
9	TX1-	➔	TX1-
10	TX1+	➔	TX1+
11	SHIELD	---	SHIELD
12	N.C.	---	N.C.
13	N.C.	---	N.C.
14	+5VAVDET	➔	+5VAVDET
15	GND	---	GND
16	HPDET	➔	HPDET
17	TXD-	➔	TXD-
18	TXD+	➔	TXD+
19	SHIELD	---	SHIELD
20	N.C.	---	N.C.
21	N.C.	---	N.C.
22	SHIELD	---	SUIELD
23	TXC+	➔	TXC+
24	TXC-	➔	TXC-

AVC(FC4) P302P TC57587-01-401			<b>PDP</b>
1	TXD	➔	TXD
2	RXD	↵	RXD
3	PARITY	➔	PARITY
4	REMO-PDP	↵	REMO-PDP
5	AUDIO L	➔	AUDIO L
6	AUDIO R	➔	AUDIO R
7	PDDDET	↵	PDDDET
8	AVDET2	➔	AVDET2

# Microprocessor Pins

Pin No.		FUNCTION	INVERTED (I) OR BUFFERED (B) FUNCTION	IN/OUT				
<b>Port 0</b>								
9	0.0	POWER-ON		IN	Power key input	on	stand-by	power save
10	0.1	POWER1		OUT	Power control 1	H(1.5V)	L	H(1.2V)
11	0.2	POWER2		OUT	Power control 2	H(1.0V)	L	L
12	0.3		(I) POWER-LED 5V	OUT	Power LED control	H(1.5V)	H(1.5V)	H(1.5V)
13	0.4		(I) OSD-RESET	OUT	PC OSD reset			
14	0.5		(I) PM-RESET	OUT	PDP reset			
15	0.6	WC# EEPROM		OUT	EEPROM enable			
16	0.7	AV-LINK-OUT	(I) AV LINK	OUT	AV link output			
<b>Port 1</b>								
41	1.0	3WB-CLOCK	(I) 3WB-CLOCK 5V	OUT	3 wire bus clock			
42	1.1	FC-ENABLE	(I) FC-ENABLE 5V	OUT	FC enable			
43	1.2	MSC-ENABLE	(I) MSC-ENABLE 5V	OUT	MSC enable			
44	1.3		(I) OSD-EN	OUT	PC OSD enable			
45	1.4		(I) MSP-RESET	OUT	MSP3410 reset			
46	1.5	3WB-DATA	(B) 3WB-DATA+5V	IN/OUT	3 wire buses data			
47	1.6	SCL-3V3	(B) SCL+5V	OUT	I2C bus clock			
52	1.7	SDA-3V3	(B) SDA+5V	IN/OUT	I2C bus data			
<b>Port 2</b>								
24	2.0	ADC0	FROM SCART1 PIN 8	IN	Scart 101 (AV1) pin 8 detect			



25	2. 1	ADC1	FROM TUNER AGC	IN	AGC level detect			
26	2. 2	PDDDET	FROM PDP	IN	PDP ON detect			
27	2. 3	ADC3	FROM FRONT SWITCHES	IN	Vol+/- &Prog.+/- key input			
<b>Port 3</b>								
31	3. 0	IF TRAP	ADJACENT CHANNELS	OUT	Not used			
32	3. 1	1900TX- 3v3		OUT	PDP communicatio n via RS232C			
33	3. 2	SCI	FROM AVLINK	IN	AV link input			
34	3. 3	IR1	IR FROM PDP	IN	IR input			
35	3. 4	FRONT- SVHS- SOCKET		IN	S-VHS socket detect			
36	3. 5	MAP1	A18 ON SRAM	OUT	SRAM mapping			
37	3. 6	MAP2	A15/A18 SWITCH	OUT	SRAM mapping			
38	3. 7	1900RX		IN	PDP communicatio n via RS232C			
<b>Port 4</b>								
48	4. 2	MEM RD#		OUT	SRAM output enable			
49	4. 3	MEM WR#		OUT	SRAM write enable			

# Connections to FC4

	PSF at AVC	<u>P001</u> at FC4			
Pin No.	PIN NAME	PIN NAME	IN/OUT	FUNCTIONS	NOTE
1	GND	GND	I/O	I <sup>2</sup> C bus DATA	
2	N.C.	N.C.	I/O	I <sup>2</sup> C bus CLOCK	
3	GND	GND	-	GND	
4	DATA	DATA	I/O	3 wires DATA	5V CMOS
5	CLK	CLK	I	3 wires CLOCK	5V CMOS
6	GND	GND	-	GND	
7	FC-ENA	FC-ENA	I	FC micro enable	5V CMOS
8	MSC-ENA	OSD-CS	I	MSC micro enable	5V CMOS
9	DATA	OSD-DATA	I	3 wires DATA	5V CMOS
10	CLK	OSD-CLK	I	3 wires CLOCK	5V CMOS
11	GND	GND	-	GND	
12	N.C.	N.C.(2H)	O	2H sync for OSD	
13	N.C.	K_DET	I	Enable for OSD generator	
14	N.C.	N.C.(2V)	O	2V sync for OSD	
15	N.C.	KMASK	I	RESET for OSD generator	
16	GND	GND	-	GND	
17	RS232C-PDP(TxD)	32C-PDP (TXD)	I	RS232C-TxD	5V CMOS
18	RS232C-PDP(RxD)	32C-PDP (RXD)	O	RS232C-RxD	5V CMOS
19	GND	GND	-	GND	
20	+5VSTB	AVDET	I	PDP control	
21	N.C.	N.C.	I	MATRIX control	
22	Remo-PDP	Remo-PDP	O	R/C command from PDP	5V CMOS
23	GND	N.C.	-	GND	
24	PM RST	PM RST	I	PDP control	5V CMOS
25	PD DET	PD DET	O	PDP control	5V CMOS
26	GND	GND	-	GND	
27	MY	MY	I	Video Y	1.4V±0.06Vp-p
28	MCb	MCb	I	Video Cb	0.7v±0.03Vp-p
29	MCr	MCr	I	Video Cr	0.7v±0.03Vp-p

30	GND	GND	-	GND	
31	MH	MH	I	Main H sync	5V CMOS
32	MV	MV	I	Main V sync	5V CMOS
33	GND	GND	-	GND	
34	SY	SY	I	Sub Y/G	1.4V±0.06Vp-p (Y) / 0.7Vpp±0.03Vpp (G)
35	SCb	SCb	I	Sub Cb/B	0.7v±0.03Vp-p
36	SCr	SCr	I	Sub Cr/R	0.7v±0.03Vp-p
37	GND	GND	-	GND	
38	SH	SH	I	Sub H sync	5V CMOS
39	SV	SV	I	Sub V sync	5V CMOS
40	GND	GND	-	GND	
41	GND	GND(OSD/TXT G)	I	GND	
42	GND	GND(OSD/TXT B)	I	GND	
43	GND	GND(OSD/TXT R)	I	GND	
44	GND	GND(OSD BLK/Ys)	I	GND	
45	GND	GND(OSD/Ym)	I	GND	
46	GND	GND	-	GND	
47	AUDIO L	AUDIO L	I	Audio L	typ 500mVrms
48	GND	GND	-	GND	
49	AUDIO R	AUDIO R	I	Audio R	typ 500mVrms
50	GND	GND	-	GND	
<b>P002P</b>			<b>at FC4</b>		
<b>PIN NO.</b>	<b>PIN NAME</b>		<b>IN/OUT</b>	<b>FUNCTIONS</b>	<b>NOTE</b>
1	FA+6.0V		I	6V power supply	460mA
2	FA+6.0V		I	6V power supply	
3	GND		-	GND	
4	GND		-	GND	
5	FSTB+5V		I	Stand-by +5V	50mA
6	FSTB+5V		I	Stand-by +5V	
7	GND		-	GND	

<b>P003P</b>			<b>at FC4</b>		
<b>PIN NO.</b>	<b>PIN NAME</b>		<b>IN/OUT</b>	<b>FUNCTIONS</b>	<b>NOTE</b>
1	D+1.8V		I	1.8V power supply	500mA
2	D+1.8V		I	1.8V power supply	
3	GND		-	GND	
4	GND		-	GND	
5	D+3.3V		I	3.3V power supply	350mA
6	D+3.3V		I	3.3V power supply	
7	D+3.3V		I	3.3V power supply	
8	GND		-	GND	
9	GND		-	GND	

# PCB Connectors

AVC											
ESC	2908877	FINAL ASSY	CO-10C-C2R0-431	Control Board	PSC	EA00069R	CPC10PH2R0HTPH-SM3	AV Board	PL702	EA00349R	CPC10PH2R0VTPH-SM3
EF1	EF22161	FINAL ASSY	CO-07C-C1R5-391-ZH	Power Board	PFP1	EA01246R	CPC07BP1R5VT-SM3	FC4	P002P	EA01266R	CPC07BP1R5HT-SM3A
EF2	EF22171	FINAL ASSY	CO-09C-C1R5-391-ZH	Power Board	PFP2	EA01248R	CPC09BP1R5VT-SM3	FC4	P003P	EA01268R	CPC09BP1R5HT-SM3A
ESF	EK01108	FINAL ASSY	PRW-SML2CD-50P-L700	AV Board	PSF	EA00932R	CPC50FP0R5VT-FH12	FC4	P001	EA01561R	CPC50FP0R5HT-FLZX
<u>PSP</u>	ED04153U	Power Board	CP-19BP1R2VU1.25FJN	AV Board	PSP	ED04163U	CP-19BS1R2VU1.25FJN	-	-	-	-

FC4				
P001	EA01561R	CPC50FP0R5HT-FLZX	PSF	AV Board
P002P	EA01266R	CPC07BP1R5HT-SM3A	PFP1	Power Board
P003P	EA01268R	CPC09BP1R5HT-SM3A	PFP2	Power Board
P301P	EY01501	PJX-DVI(F)24P RA SOK		PDP Signal Audio Board
P302P	EY01491	PJX-YKF51-5376		PDP Signal Audio Board
P501P	EA01247R	CPC08BP1R5VT-SM3		For Alignment
P601P	EY01062	PJX-DSUB JACK		PC Input Terminal

AV Board				
PSF	EA00932R	CPC50FP0R5VT-FH12	P001	FC4
<u>PSP</u>	ED04163U	CP-19BS1R2VU1.25FJN	PSP	PowerBoard
PL702	EA00349R	CPC10PH2R0VTPH-SM3	PSC	ControlBoard

Power Control Board				
<u>PFP1</u>	EA01246R	CPC07BP1R5VT-SM3	P002P	FC4
<u>PFP2</u>	EA01248R	CPC09BP1R5VT-SM3	P003P	FC4
<u>PSC</u>	EA00069R	CPC10PH2R0HTPH-SM3	PL702	AV Board

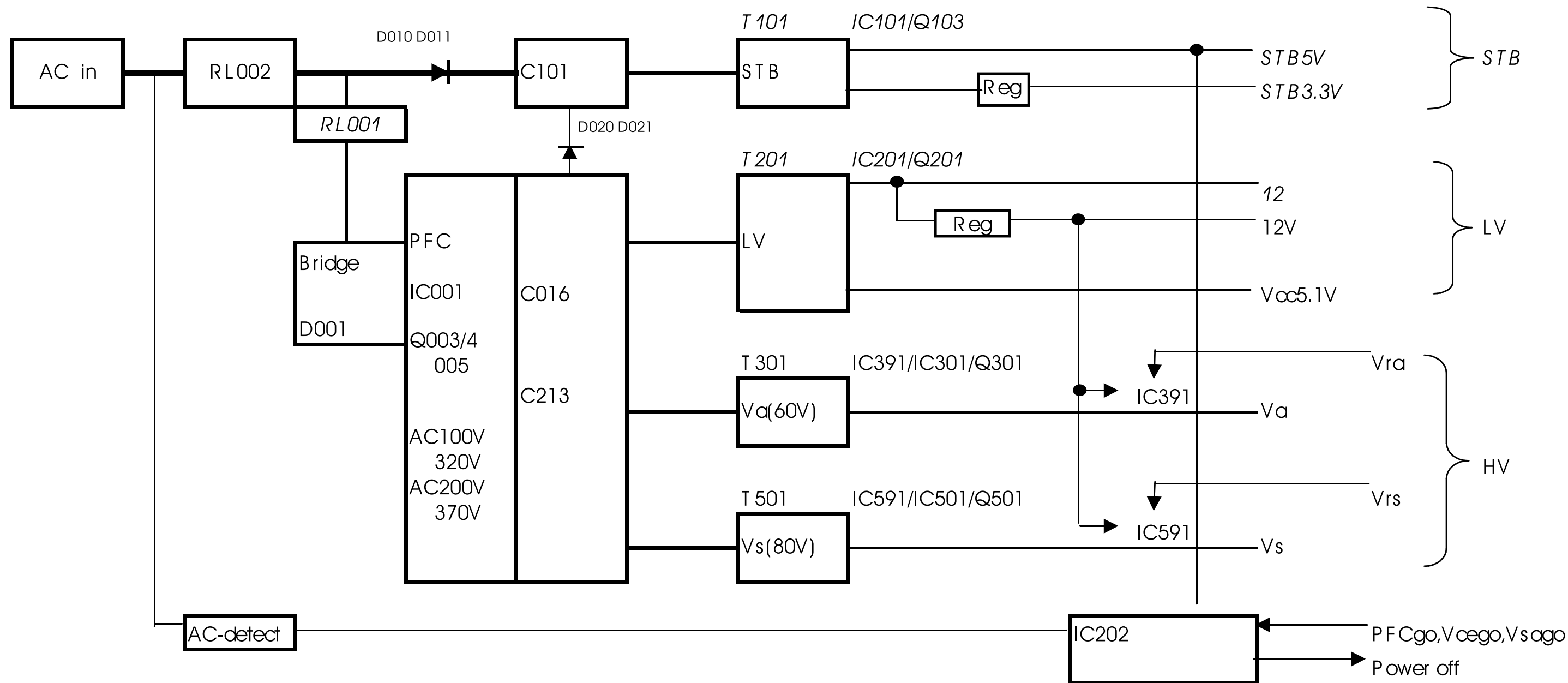
**THE UPDATED PARTS LIST  
FOR THIS MODEL IS  
AVAILABLE ON ESTA**

No	ITEM	POTENTIAL PROBLEM/QUESTION	CAUSE and COUNTERMEASURE/ADVICE	NOTE
1	<b>CVBS &amp; S.INPUT SOFTER</b>	CVBS and S-VHS input is softer than CL32PD2100 (with NR=off). When DVD signal input through AV1, Front by CVBS or S-VHS, picture is soft.	CAUSE ; DVD output signal includes noise equivalent to picture frequency. CL32PD2100 displays a picture more detail with NR=off than 32PD3000 but DVD noise is also emphasized especially seeing sky, you can see dot noise on CL32PD2100. 32PD3000 is filtered noise so you cannot see noise but a picture is also becoming softer. ADVICE; CVBS and S-input is not good for demonstration. Because almost all DVD has RGB, please use RGB for demo or YCbCr/YpbPr instead (new feature) RGB input of 32PD3000 is more crisp and less noise than CL32PD2100.	
2	<b>BLACK LEVEL BRIGHT</b> (Black level set- up)	CVBS and S-output from DVD player has set up voltage of black level around 0.1V. This causes black brighter and loose contrast. This was found with DVD player DV P305 with Spanish DVD disc. I have never found the same phenomenon in any other places so far. In HEL, I have checked DV P305 with UK DVD disc and confirmed OK (no set up voltage) In Italy, this was not found with DVD player DV P250 with Italy DVD disc. CVBS and S-input from DVD	The set up black level is not expected on PAL signal. So something wrong probably when DVD disc is copied in Spanish DVD software company. Or Some DVD player may have potential cause of this problem. But it is recommended that the demonstration should be done by RGB or component input to avoid this phenomenon. Almost all DVD players have RGB output.	This is observed only in Spain. <b>This is caused by DVD player option. DV P305 has menu option to switch SET UP &gt; DISPLAY OPTION &gt; BLACK LEVEL = On/Off. When it is set to On, the signal on left hand drawing is output from DVD.</b>
3	<b>LTI EFFECT</b> Luminance Transient Improvement	<b>PICTURE &gt; MORE &gt; LTI</b> LTI effect is not significant in CVBS and S-INPUT but very significant on RGB and component input.	CL32PD2100 has LTI but it is so strong that noise is also emphasised very much. On 32PD3000, this is improved to effect clear signal avoiding noise enhancement.	
4	<b>NOISE REDUCTION EFFECT</b>	<b>PICTURE &gt; MORE &gt; YNR</b> <b>PICTURE &gt; MORE &gt; CNR</b> Noise reduction effect is not as strong as CL32PD2100. CL32PD2100 is too strong to give crisp picture. Instead, there are 2 types Noise	Sometime on TV, noise appears close to colour frequency. By previous noise reduction, when this noise is reduced by NR feature, it affect luminance causing loose of picture sharpness. CNR only reduce this noise without affecting picture sharpness.	

No	ITEM	POTENTIAL PROBLEM/QUESTION	CAUSE and COUNTERMEASURE/ADVICE	NOTE
		Reduction on 32PD3000. YNR and CNR. YNR ; Luminance noise is reduced without affecting Chrominance transient. CNR ; Chrominance noise is reduced without losing sharpness of picture (Luminance)		
5	<b>WHITE BALANCE</b>	WHITE BALANCE adjustment is done by menu bar. COOL/NORMAL/WARM selection is also possible but in service menu. In Picture mode is selected as shown below. DYNAMIC ; COOL NATURAL ; COOL CINEMA ; NORMAL FAVOURITE ; COOL	White balance adjustment in menu bar ranges from 6500K to 11000K in DYNAMIC/NATURAL/FAVOURITE. In CINEMA, colour temperature range is shifted to warm side.	
6	<b>CLOCK NOISE ON SOUND</b>	When selecting <b>CENTRE speaker</b> or <b>AV4</b> mode, you can hear clock noise in sound when volume level is increased more than half. This is caused by cross-talk in the cable. AV4 sound and centre sound are located after audio decoder (MSP3410) which leads audio input impedance	Screened interface cable cures this problem.	It will be applied after trail 100 Q'ty. For 100, DMD send HEL improved one.
7	<b>RGB MODE STREAK NOISE</b>	When you see streak noise on RGB input, this is caused by clamping error accidentally.	In service mode, check SVC > OPT > RGB Comb = off	
8	<b>MENU WIDEMODE</b>	When you select MENU, picture wide mode is changed to WIDESCREEN wherever wide mode is.	This is because OSD is inserted BEFORE a picture is scaled to any of wide modes. If a picture is zoomed to LETTER BOX or T16:9L, some of the menu is hidden if wide mode remains as it is. This system gets TV+TEXT feature possible.	
9	<b>PC WINDOW LIMITATION</b>	When selecting PC window, sub picture is displayed. Sub picture is not possible to display YPbPr and PC so those are prohibited to be selected.	By AV key selection, AV4 and PC is skipped. AV/PC in position, FRONT is displayed when selecting the position where AV4 and PC is stored. In case of AV in position ideally that position should be skipped. But it is not easy for software to carry out so FRONT is selected as alternative to blanking.	



No	ITEM	POTENTIAL PROBLEM/QUESTION	CAUSE and COUNTERMEASURE/ADVICE	NOTE
10	<b>PICTURE MODE</b>	Picture mode provides 4 kinds of modes. DYNAMIC, NATURAL, CINEMA, FAVOURITE	We recommend DYNAMIC ; DVD for DEMO NATURAL ; TV, VCR, STB CINEMA ; DVD, STB FAVOURITE ; TV, VCR, DVD, STB Only selecting FAVOURITE allows a user to adjust CONTRAST, BRIGHTNESS, etc.	
11	<b>AUDIO MODE</b>	Audio mode provides 4 kinds of modes. MUSIC, SPEECH, CINEMA, FAVOURITE	We recommend MUSIC ; MUSIC SPEECH ; NEWS, TALK SHOW CINEMA ; MOVIE, DRAMA FAVOURITE ; any of those and adjust to users' preference. Only selecting FAVOURITE allows a user to adjust TREBLE, BASS, TruBASS, etc	
12	<b>TRUBASS &amp; MATRIX SURROUND</b>	The effect is the same as PDP1st generation. But operation is a little different.	TruBass/Matrix are adjusted in each audio mode when selected as follows; MUSIC ; TruBASS=HIGH, MATRIX=ON SPEECH ; TruBASS=OFF, MATRIX=OFF CINEMA ; TruBASS=MID, MATRIX=ON Those can be changed in service menu. FAVOURITE ; according to user menu. Shipping is TruBASS=LOW, MTRIX=OFF However, MATRIX can be switched on and off by surround key in each audio modes after that.	
13	<b>AV4 Components INPUT</b>	AV4 supports 4 types of components inputs. Normal 50Hz (PAL) ; YCbCb50 Normal 60Nz (NTSC) ; YCbCr60 Progressive 50Hz (PAL) ; YPbPr50 Progressive 60Hz (NTSC) ; YPbPr60	When you select AV4, input signal is automatically identified to display properly on screen.	
14	<b>TV + TEXT</b>	In TV+TEXT, R/C operation follows TELETEXT operation. Ten keys select page number not a position number.	As operation, [A/B] key is switched to TV+TEXT on and off. From TELETEXT mode, it switches TV+TEXT $\mathcal{E}$ TEXT $\mathcal{E}$ TV+TEXT .... From TV mode, it switches TV+TEXT $\mathcal{E}$ TV $\mathcal{E}$ TV+TEXT .... In TV+TEXT, menu is not available to adjust picture and any other menu items. (In TEXT mode, the same thing happens.)	



1.AC input

No.	CN61
1	AC(L)
2	NC
3	AC(N)
4	NC
5	NC
6	FG

2.signal 1

No.	CN63
1	STB 5V
2	NC
3	STB 3.3V
4	Power off
5	GND

5.Panel 1

No.	CN64
1	Va
2	NC
3	Vcc
4	GND
5	GND
6	GND
7	NC
8	Vs
9	Vs
10	Vs

8.Panel 4

No.	CN68
1	STB 3.3V
2	NC
3	GND
4	GND
5	NC
6	Vcc

3.Signal 2

No.	CNPPS
1	NC
2	NC
3	NC
4	GND
5	NC
6	GND
7	GND
8	12V
9	12V

6.Panel 2

No.	CN65
1	Vcc
2	GND
3	GND
4	GND
5	GND
6	NC
7	Vs
8	Vs
9	Vs

9.Panel 5

No.	CN69
1	NC
2	NC
3	NC
4	NC
5	GND
6	Vsago
7	GND
8	Vcego
9	GND
10	PFCgo
11	GND
12	Vra
13	GND
14	Vrs
15	GND
16	Vlak
17	GND
18	Vak
19	GND
20	Vsk

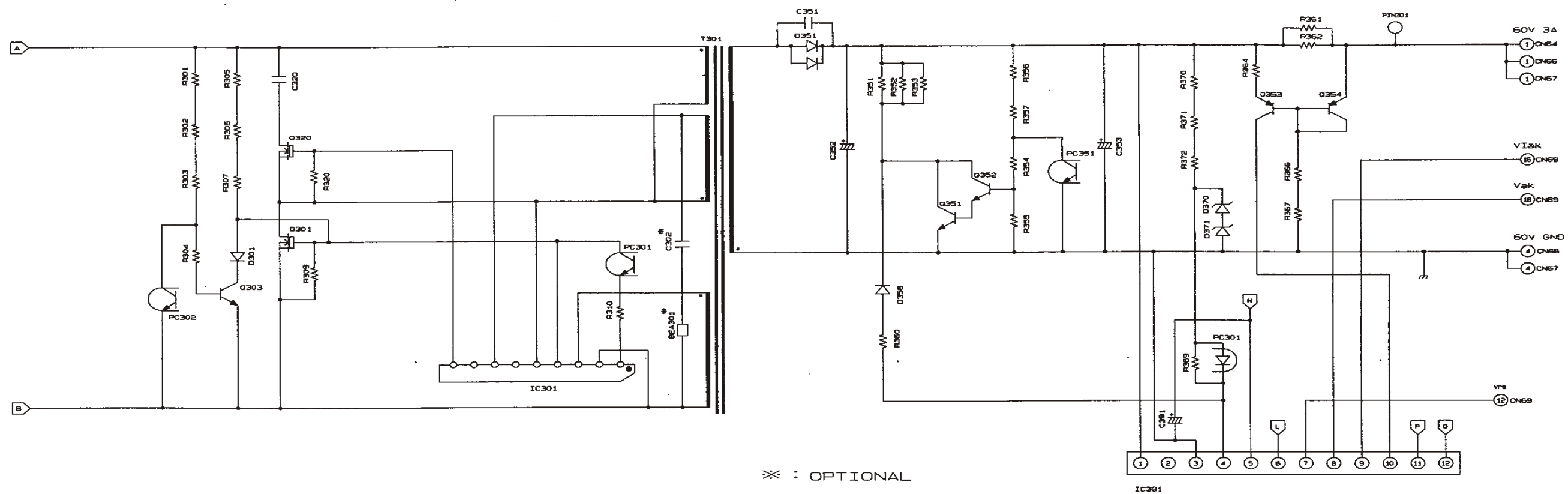
4.Signal 3

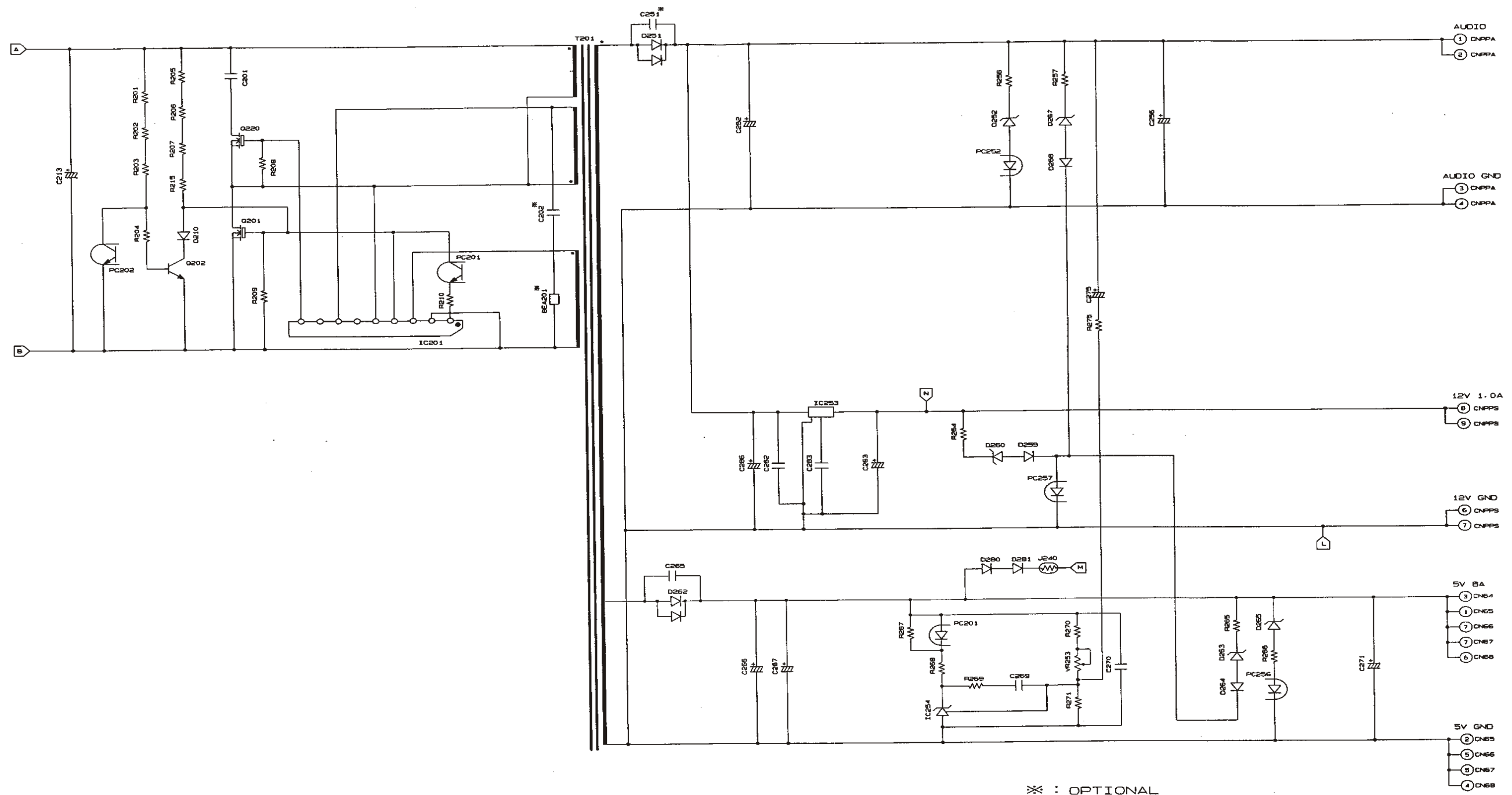
No.	CNPPA
1	12V
2	12V
3	GND
4	GND

7.Panel 3

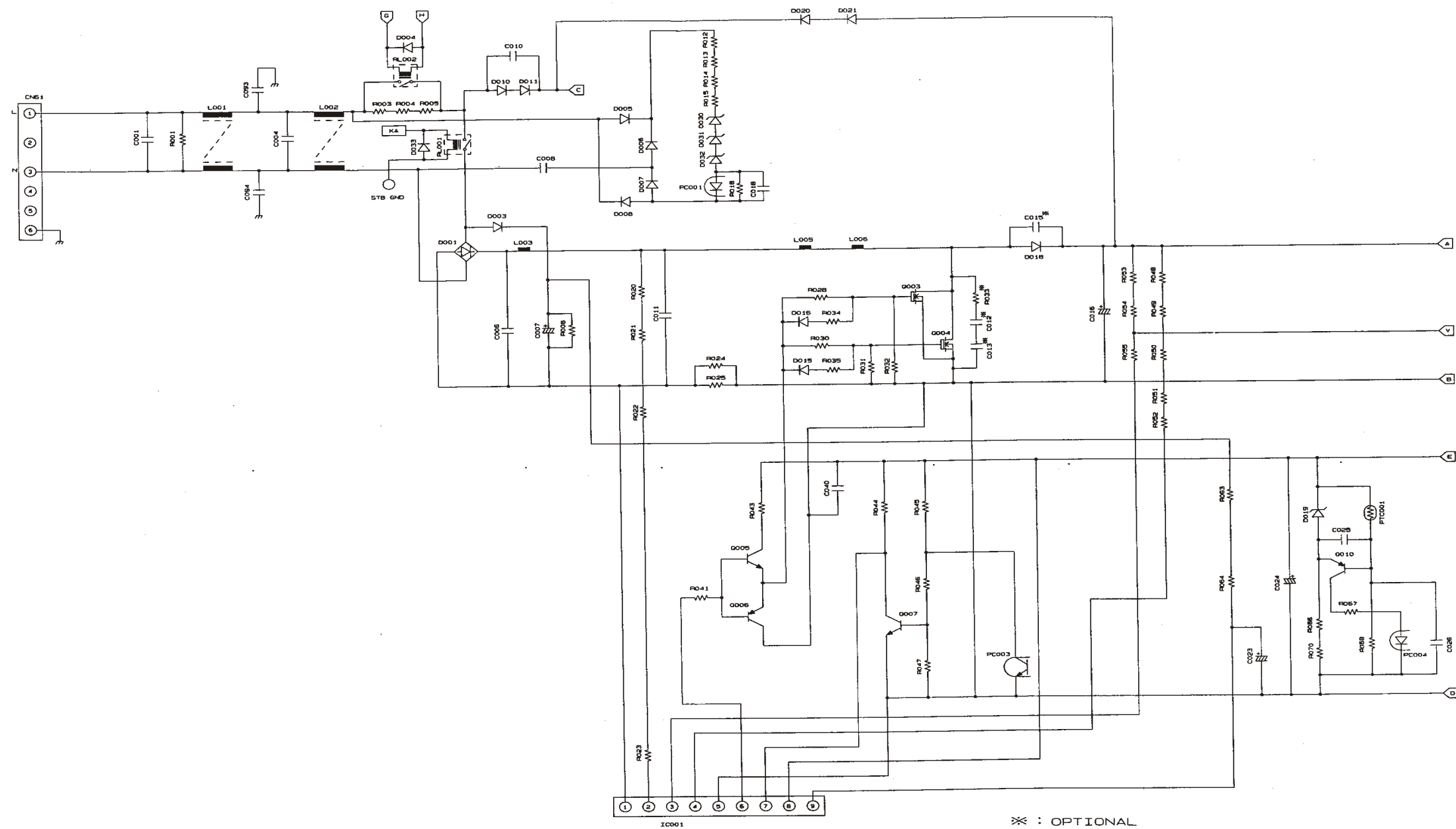
No.	CN66/CN67
1	Va
2	NC
3	NC
4	GND
5	GND
6	NC
7	Vcc



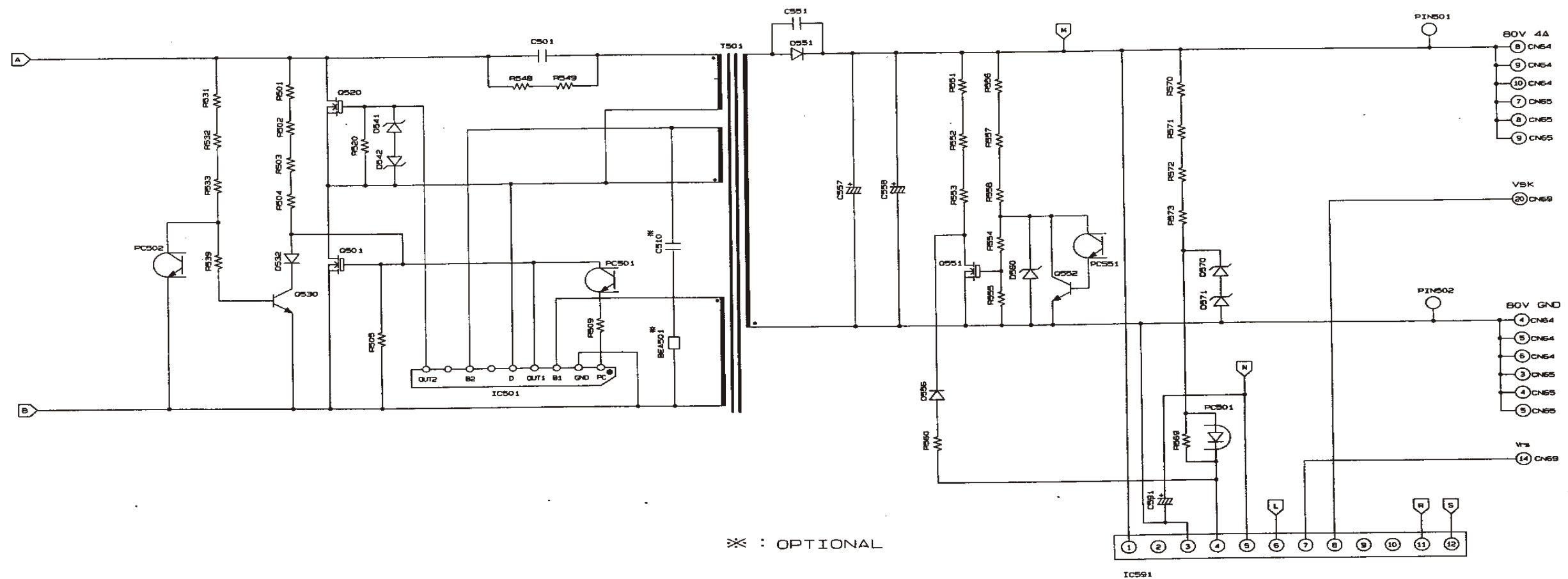




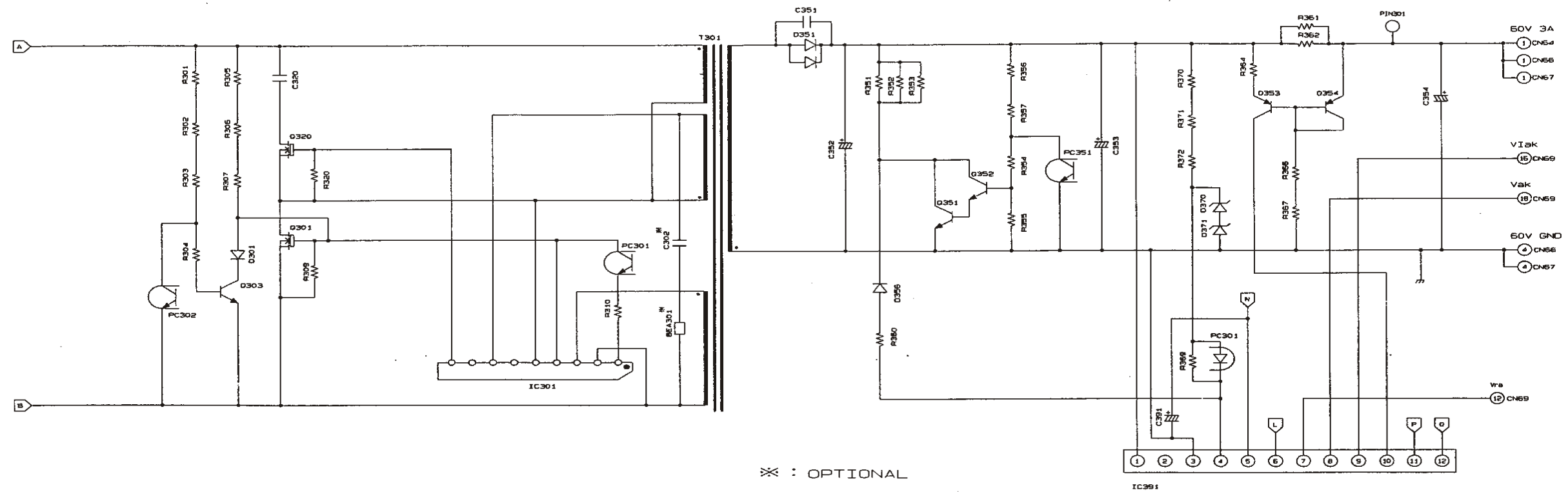








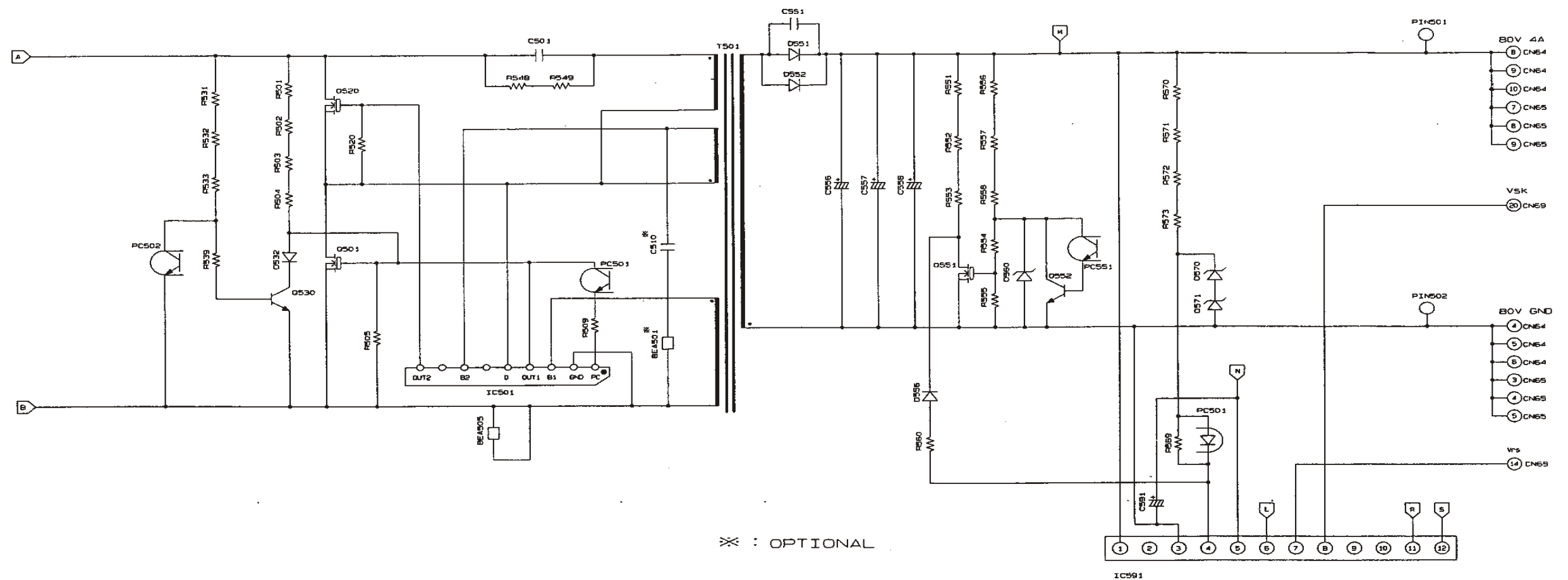


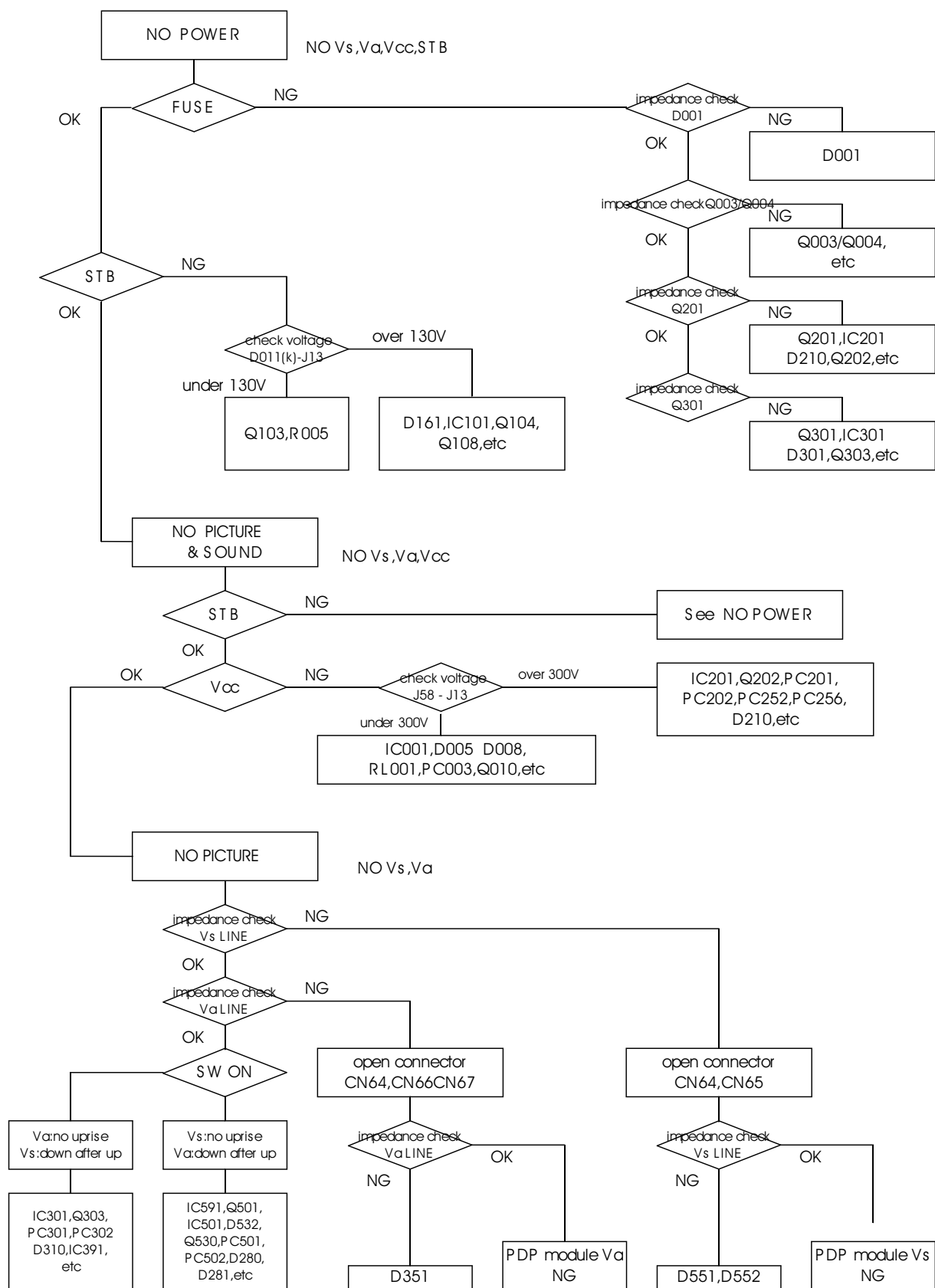














**HITACHI**  
Hitachi, Ltd. Tokyo, Japan  
International Sales Division  
**THE HITACHI ATAGO BUILDING,**  
No. 15-12 Nishi Shinbashi, 2 - Chome,  
Minato - Ku, Tokyo 105-8430, Japan.  
Tel: 03 35022111

**HITACHI EUROPE LTD,**  
Whitebrook Park  
Lower Cookham Road  
Maidenhead  
Berkshire  
SL6 8YA  
**UNITED KINGDOM**  
Tel: 01628 643000  
Fax: 01628 643400  
Email: [consumer-service@hitachi-eu.com](mailto:consumer-service@hitachi-eu.com)

**HITACHI EUROPE S.A.**  
364 Kifissias Ave. & 1, Delfon Str.  
152 33 Chalandri  
Athens  
**GREECE**  
Tel: 1-6837200  
Fax: 1-6835964  
Email: [service.hellas@hitachi-eu.com](mailto:service.hellas@hitachi-eu.com)

**HITACHI EUROPE GmbH**  
Munich Office  
Dornacher Strasse 3  
D-85622 Feldkirchen bei München  
**GERMANY**  
Tel: +49-89-991 80-0  
Fax: +49-89-991 80-224  
Hotline: +49-180-551 25 51 (12ct/min)  
Email: [HSE-DUS.service@hitachi-eu.com](mailto:HSE-DUS.service@hitachi-eu.com)

**HITACHI EUROPE S.A.**  
Gran Via Carlos III, 86, planta 5  
Edificios Trade - Torre Este  
08028 Barcelona  
**SPAIN**  
Tel: 93 409 2550  
Fax: 93 491 3513  
Email: [atencion.cliente@hitachi-eu.com](mailto:atencion.cliente@hitachi-eu.com)

**HITACHI EUROPE srl**  
Via Tommaso Gulli N.39, 20147  
Milano, Italia  
**ITALY**  
Tel: +39 02 487861  
Tel: +39 02 38073415 Servizio Clienti  
Fax: +39 02 48786381/2  
Email: [customerservice.italy@hitachi-eu.com](mailto:customerservice.italy@hitachi-eu.com)

**HITACHI Europe AB**  
Box 77 S-164 94 Kista  
**SWEDEN**  
Tel: +46 (0) 8 562 711 00  
Fax: +46 (0) 8 562 711 13  
Email: [csgswe@hitachi-eu.com](mailto:csgswe@hitachi-eu.com)

**HITACHI EUROPE S.A.S**  
Lyon Office  
B.P. 45, 69671 BRON CEDEX  
**FRANCE**  
Tel: 04 72 14 29 70  
Fax: 04 72 14 29 99  
Email: [france.consommateur@hitachi-eu.com](mailto:france.consommateur@hitachi-eu.com)

**HITACHI EUROPE LTD (Norway) AB**  
STRANDVEIEN 18  
1366 Lysaker  
**NORWAY**  
Tel: 67 5190 30  
Fax: 67 5190 32  
Email: [csgnor@hitachi-eu.com](mailto:csgnor@hitachi-eu.com)

**HITACH EUROPE AB**  
Egebækgård  
Egebækvej 98  
DK-2850 Nærum  
**DENMARK**  
Tel: +45 43 43 6050  
Fax: +45 43 60 51  
Email: [csgnor@hitachi-eu.com](mailto:csgnor@hitachi-eu.com)

**HITACHI EUROPE AB**  
Neopoli / Niemenkatu 73  
FIN-15140 Lahti  
**FINLAND**  
Tel : +358 3 8858 271  
Fax: +358 3 8858 272  
Email: [csgnor@hitachi-eu.com](mailto:csgnor@hitachi-eu.com)

**Hitachi Europe Ltd**  
Bergensesteenweg 421  
1600 Sint-Pieters-Leeuw  
**BELGIUM**  
Tel: +32 2 363 99 01  
Fax: +32 2 363 99 00  
Email: [sofie.van.bom@hitachi-eu.com](mailto:sofie.van.bom@hitachi-eu.com)

**HITACHI EUROPE LTD**  
Na Sychrove 975/8  
101 27 Praha 10 - Bohdalec  
**CZECH REPUBLIC**  
Tel: +420 267 212 383  
Fax: +420 267 212 385  
Email: [csgnor@hitachi-eu.com](mailto:csgnor@hitachi-eu.com)